

FORTY-NINTH ANNUAL REPORT
OF THE
DEPARTMENT OF MARINE
AND FISHERIES

FOR THE FISCAL YEAR 1915-16

MARINE

PRINTED BY ORDER OF PARLIAMENT



OTTAWA

PRINTED BY J. DE L. TACHÉ
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1916

*To Field Marshal, His Royal Highness Prince Arthur William Patrick Albert,
Duke of Connaught and of Strathearn, K.G., K.T., K.P., etc., etc., etc., Governor
General and Commander in Chief of the Dominion of Canada.*

MAY IT PLEASE YOUR ROYAL HIGHNESS:

I have the honour to submit herewith, for the information of Your Royal Highness and the Parliament of Canada, the Forty-ninth Annual Report of the Department of Marine and Fisheries, Marine Branch.

I have the honour to be,

Your Royal Highness's most obedient servant,

J. D. HAZEN,
Minister of Marine and Fisheries.

DEPARTMENT OF MARINE,
OTTAWA, October, 1916.

TABLE OF CONTENTS.

REPORT SUBMITTED BY MINISTER.

REPORT OF DEPUTY MINISTER, Subjects paged in summary below.

A

	PAGE.
Aranmore.....	249
Aberdeen.....	250
Acetylene.....	256
Appropriation and Expenditure, Marine Branch, Statement of.....	36-122
Agricultural Meteorology.....	153

B

Bounties and Subsidies to encourage shipbuilding in:—

Argentine Republic.....	2
Austria-Hungary.....	3
Belgium.....	3
Brazil.....	3
Denmark.....	3
France.....	3
German Empire.....	4
Italy.....	5
Japan.....	6
Norway.....	8
Rumania.....	8
Russia.....	8
Spain.....	9
Sweden.....	9
Uruguay.....	9
United States.....	10
Brant.....	252
British Columbia Salvage and Wrecking Co.....	274
Belleville Harbour Commission, report of.....	262
Buoys unlighted, etc., list of.....	65

C.

Coasting voyages.....	13
Canadian Shipping statistics of 1915.....	14
Correspondence.....	36
Chief Engineer's Report on lighthouse construction, improvements, etc.....	38
" " staff.....	38
" " office work.....	38
" " draughting.....	39
" " publications.....	40
" " personal inspection.....	41
" " lights on Hudson Bay route.....	42
" " departmental depots, Victoria, B.C.....	42
" " " " Prescott, Ont.....	43
" " removal of obstructions.....	43
" " wharves, repairs, etc.....	43
" " icebreaking.....	44
" " New aids to navigation, etc.....	45
" " Nova Scotia.....	47
" " New Brunswick.....	49
" " Prince Edward Island.....	49
" " Quebec District.....	51
" " Montreal District.....	52
" " Ontario.....	54
" " British Columbia.....	56
" " Recapitulation of expenses.....	57
" " Lightstations and other aids to Navigation in Canada connected by Telegraph and Telephone with Commercial centres.....	63
Commissioner of Lights' Report.....	63
" " Statement showing number of lights of several orders, lightships, Lightboats, fog alarms, buoys, submarine bells, etc.....	64
" " Statement of localities giving the number of unlighted bouys, stakes, bushes, dolphins, spindles and beacons maintained throughout Canada—	
New Brunswick District.....	65
Nova Scotia District.....	65
Prince Edward Island.....	67

7 GEORGE V, A. 1917

	C.	PAGE.
Commissioner of Lights' Report	Quebec.....	67
	Montreal.....	67
	Prescott.....	68
	Parry Sound.....	68
	Kenora.....	68
	Manitoba.....	68
	British Columbia.....	68
Citadel Signal Station, Halifax.....		247
Champlain.....		255
	D.	
Dominion Steamers.....		249
Druid.....		255
Dollard.....		256
	E.	
Expenditure and Revenue.....		36
“ “ Statement of.....		122
Expenditure Marine Branch since Confederation.....		138
Estevan.....		252
Eureka.....		256
	G.	
Grenville.....		257
	H.	
Harbour Commissioners' Report of Montreal.....		26
“ “ Quebec.....		30
“ “ Toronto.....		31
“ “ Three Rivers, P.Q.....		258
“ “ Pictou, N.S.....		261
“ “ Belleville, Ont.....		262
“ “ Vancouver, B.C.....		264
Harbour Masters appointed during the year.....		35
Harbours and Harbour Masters, list of, etc.....		126
	I.	
Icebreaking, Chief Engineer's report on.....		44
Investigation into wrecks, Wreck Commissioner's report of.....		160
	L.	
Licensing of ships.....		11
Legislation.....		34
Lightkeepers appointed during the year.....		35
Lighthouse construction, improvements and repairs.....		45
Lady Laurier.....		249
Lansdowne.....		249
Leebro.....		253
Lambton.....		257
Live Stock shipments.....		275
	M.	
Maritime States of the World—tonnage of 1915-16.....		24
Montreal Harbour Commissioners' report.....		26
“ Port Wardens' Annual report.....		267
Meteorological Service—Report of Director.....		139
“ “ Quebec Observatory.....		148
“ “ St. John, N.B., Observatory.....		149
“ “ Victoria, B.C., Observatory.....		151
“ “ Agricultural Meteorology.....		153
Marine Hospital Service, Report of Medical Superintendent.....		155
Master, Mates, Seamen and Pilots Branch.....		
“ “ “ Report of Officer in charge.....		186
“ “ “ Navigation Schools.....		186
“ “ “ Masters and Mates.....		186
“ “ “ Certificates issued.....		188
“ “ “ Receipts and Expenditure.....		188
“ “ “ Pilotage.....		188
“Minto”.....		250
“Montcalm”.....		254
“Maggie May”.....		256

TABLE OF CONTENTS

vii

SESSIONAL PAPER No. 21

N.	PAGE.
Navigation of River St. Lawrence, opening and closing of.....	36
Navigation Schools.....	186
Newington.....	254
O.	
Obstructions to Navigation, removal of.....	43
P.	
Ports of Registry by Provinces, list of.....	18
Private shipbuilding plants in Canada.....	25
Pilotage—Annual report of officer in charge.....	188
“ Montreal, P.Q., report of.....	199
“ Quebec, P.Q., report of.....	203
“ Vancouver, B.C., report of.....	209
“ Victoria and Esquimalt, report of.....	211
“ Nanaimo, B.C., report of.....	213
“ New Westminster, B.C., report of.....	215
“ Halifax, N.S., report of.....	216
“ Sydney, N.S., report of.....	218
“ Louisburg, N.S., report of.....	221
“ Pictou, N.S., report of.....	223
“ Minas Basin, N.S., report of.....	224
“ Bras d'Or, N.S., report of.....	225
“ St. Ann Bay, N.S., report of.....	226
“ Northport and Tidnish, N.S., report of.....	227
“ Parrsboro, N.S., report of.....	228
“ Southern Inverness, N.S., report of.....	229
“ St. Mary and Liscomb, N.S., report of.....	230
“ Wallace, N.S., report of.....	231
“ Richmond County, N.S., report of.....	232
“ St. John, N.B., report of.....	233
“ Miramichi, N.B., report of.....	235
“ Restigouche, N.B., report of.....	237
“ Caraquet, N.B., report of.....	239
“ Shepody Basin, N.B., report of.....	240
“ Bathurst, N.B., report of.....	241
“ Baie Verte and Cape Tormentine, N.B., report of.....	243
“ Shediac, N.B., report of.....	243
“ Harvey and Alma, N.B., report of.....	245
“ Richibucto, N.B., report of.....	246
Prince Edward Island (Icebreaker).....	251
Port Wardens Reports—list of returns made.....	267
“ Montreal.....	268
Pictou Harbour Commission Report.....	261
Q.	
Quebec Harbour Commissioners' Report.....	30
“ Pilotage Legislation.....	34
“ Report of Pilotage authorities.....	203
“Quadra”.....	253
Quebec Salvage and Wrecking Company.....	273
R.	
Revenue.....	36
“ statement of.....	123
Rouville.....	255
Reserve.....	257
S.	
Shipbuilding Bounties—Argentine Republic.....	2
“ Austria-Hungary.....	3
“ Belgium.....	3
“ Brazil.....	3
“ Denmark.....	3
“ France.....	3
“ German Empire.....	4
“ Italy.....	5
“ Japan.....	6
“ Norway.....	8
“ Rumania.....	8
“ Russia.....	8
“ Spain.....	9

	S.	PAGE.
Shipbuilding Bounties—Sweden.....		9
“Uruguay.....		9
“United States.....		10
Shipping destroyed since outbreak of War.....		10
Ships, licensing of.....		11
Shipbuilding, private plants in Canada.....		25
St. Lawrence River Ship Channel—Report of Superintending Engineer.....		69
“History of Channel.....		69
“Accidents in 1915.....		74
“Marine Signal Service.....		76
“Icebreaking 1915-16.....		79
“General information.....		81
“Cost of Ship Channel to date.....		83
“Dredges, description and work of.....		84
“Dredging operations, progress of 1915.....		
“In the 30-fort project.....		94
“In the 35-fort project.....		96
“Abstract of work of dredging fleet, 1915.....		98
“Classification of disbursements for fiscal year.....		101
“Details of dredging, locality and cost per cu. yd.....		102
“Dredging fleet, description of.....		105
“Summary of fleet.....		112
Sorel Shipyard—Report of Superintendent.....		113
“Repairs to Dominion Steamers, etc.....		113
“Construction of lights department.....		114
“New constructions.....		115
“General repairs at Shipyard.....		117
“Revenue and expenditure, 1915-16.....		118
Sick and distressed mariners.....		155
Signal Station Citadel, Halifax.....		247
Sable Island Humane Station, report of Superintendent.....		248
Stanley.....		251
Shamrock.....		256
Scout.....		257
Shipments of live stock.....		275
Shipping and discharging of seamen.....		280
Steamboat Inspection.....		37
Signal Service, St. Lawrence River.....		76
Subsidized wrecking Companies, reports of.....		273
T.		
Tonnage of Canadian Vessels, March, 1916.....		1
““Maritime States of the World, 1915-16.....		24
Toronto Harbour Commissioners' report.....		31
Three Rivers Harbour Commissioners' report.....		258
V.		
Vessels on Canadian Register, March, 1916.....		1
Vessels, comparative table of tonnage and speed in Maritime countries.....		2
Vessels transferred from Canadian register during year.....		12
Vessels and Tonnage on Canadian register, 1915.....		14
““1874 to 1915, comparative statement of.....		16
Vessels where registered in Canada.....		18
Vessels built and registered in Canada, comparative statement of from 1874 to 1915.....		20
Vessels removed from Canadian register books, 1915.....		23
Verchères.....		256
Vancouver Harbour Commission, report of.....		264
W.		
Wharves and wharfingers, list of.....		131
Wrecks, report of Wreck Commissioner on.....		159
“statement of investigation into.....		160
“statement of wrecks and casualties, seagoing.....		166
““inland waters.....		180
Wrecking Companies—Quebec Company.....		273
“British Columbia Comapny.....		274

REPORT

OF THE

Deputy Minister of Marine and Fisheries

To the Honourable J. D. HAZEN,
Minister of Marine and Fisheries.

SIR,—I have the honour to submit herewith my report for the fiscal year ending March 31, 1916.

It has been my aim in the preparation of this report to include such information respecting the various services entrusted to the care of the department as may prove not only useful and instructive, but generally interesting. As the result of conditions that have developed during the twenty months that the war has already continued, the question of shipping has become of far-reaching importance. Therefore it is that particular pains have been taken to assemble as concisely as possible available statistics in reference to the subject.

On March 31, 1916, the total number of vessels on the Canadian register was 8,631, measuring 1,215,021 gross tons.

In former years it was the custom to value the shipping on the Canadian register at \$30 per net ton. This figure was of course an arbitrary one, but having regard to averages it fairly approximated real values. At the present time values are abnormal and actual sales are common at prices ranging from \$75 per ton, deadweight capacity, to upwards of \$100. Freight rates, governed as they always have been by the law of supply and demand, have enormously increased during the past year. The very large number of British registered vessels withdrawn from the commercial trades since the commencement of the war, to engage in the transport of troops and munitions, accounts almost altogether for the abnormal increase in freight rates and the value of ships.

Throughout the year there has been much discussion in the press and by various public bodies as to the expediency of taking such ships as would insure the early development of a purely Canadian Mercantile Marine, not only for our inland and coasting trade, but for foreign trade as well. In the development of any scheme that may be adopted for this purpose it is to be hoped that, in so far at least as foreign trade is concerned, it will be taken for granted that the day of the small carrier has gone by.

It will be generally admitted that, conditions being normal, the construction of ships for the foreign trade of a gross tonnage of less than 3,000 tons should be discouraged. In the prosecution of that trade it will be conceded that the most economical and, therefore, the most efficient vessel is one whose carrying capacity ranges from 7,000 tons to 10,000 tons. From Lloyds' register

7 GEORGE V, A. 1917

for the year ending June 30, 1915,—the last issued—a compilation has been made showing the number of ocean steamers over 3,000 gross tons, under various flags, as follows:—

Flag.	Over 10,000 tons.	7,000 to 10,000.	5,000 to 7,000.	4,000 to 5,000.	3,000 to 4,000.	Total.
British.....	140	280	558	933	1,152	3,063
American.....	14	23	104	67	97	305
French.....	16	19	86	48	59	228
Japanese.....	8	15	55	41	106	225
Italian.....	3	19	35	52	102	211
Dutch.....	8	19	61	30	71	189
Norwegian.....	2	5	20	47	42	116
German.....	42	71	159	150	122	544
Total.....	233	451	1,078	1,368	1,751	4,881

From the same issue there has been compiled a statement giving the speed of ocean-going steamers of 3,000 gross tons or over, as follows:—

Flag.	20 knots or over.	19 knots.	18 knots.	17 knots.	16 knots.	15 knots.	14 knots.	13 knots.	12 knots.	Total.
British.....	10	6	35	41	53	71	155	266	392	1,029
American.....	6	0	5	6	13	30	30	34	32	156
French.....	8	1	4	5	9	19	19	27	26	118
Dutch.....	0	0	1	3	2	10	18	27	23	84
Japanese.....	3	3	0	0	2	17	11	24	10	70
Italian.....	4	0	1	3	10	11	18	6	9	62
Norwegian.....	0	0	0	0	2	0	0	0	0	2
German.....	5	1	4	2	4	19	22	36	105	198
Total.....	36	11	50	60	95	177	273	420	597	1,719

While on the subject of aiding the shipbuilding industry, and thus helping to establish a Canadian Mercantile Marine, it may be of interest to note what has been done in the same direction by other countries.

For the compilation of the statement which follows, outlining the methods adopted by various countries for the encouragement of shipbuilding, the department is indebted to Mr. Thomas Robb, of Montreal, manager and secretary of the Shipping Federation of Canada:—

REPORTS ON BOUNTIES AND SUBSIDIES IN RESPECT OF SHIP-BUILDING IN VARIOUS COUNTRIES.

ARGENTINE REPUBLIC.

No direct bounties have as yet been granted, but the coasting trade all towing, lighterage and salvage operations are reserved to Argentine vessels. In order for a vessel to be considered an Argentine vessel, she must fly the

SESSIONAL PAPER No. 21

Argentine flag and be registered in the republic; (b) to have an Argentine proprietary title inscribed in the proper register; (c) to be commanded by a master who is either a natural-born or naturalized subject, and (d) to be manned by a crew of whom at least one-third (in the case of vessels of over 200 tons burden) are Argentine citizens.

AUSTRIA-HUNGARY.

Shipbuilding subsidies are granted when at least 50 per cent of home-produced material is ordered—the amounts are:—

(1) In the case of steamships of iron and steel (a) for the hull, 40 kronen (\$8.10) for every gross ton; (b) for new ship-engines, new boilers, new pipes, or tubes and supplementary engines of every kind, 8 kronen (\$1.62) for every 100 kilos.

(2) In case of sailing ship of iron and steel, for the hull, when more than half the material employed is of home production, the bounty is increased by 1 per cent of its amount for every 1 per cent of such material in excess of 50 per cent.

(3) In the case of sailing ships of wood or mixed construction, for the hull, 10 kronen (\$2.02) for every ton gross.

The construction subsidy is allowed also, under certain conditions, when less than 50 per cent of home material is used, but in this case the bounty is diminished by $\frac{1}{2}$ per cent of its amount for every 1 per cent under 50 per cent.

BELGIUM.

Free entry of shipbuilding materials. In virtue of the Budget Law of December 29, 1899, materials (not otherwise duty free) to be used for the construction, equipment, fitting out or furnishing of vessels and boats, are exempted from duty, on importation into Belgium.

BRAZIL.

A government premium of 50 milreis (\$16.22) is offered per ton for steam vessels of over 80 tons built in Brazil, but has never been earned.

DENMARK.

As regards shipbuilding, the tariff law of 1908 provides for the refund of customs duties on imported materials used for the construction of new ships, subject to the limitation that the refund must not exceed in amount 2 per cent of the contract sale price.

FRANCE.

By the law enacted in 1906 the construction bounty for steamships was fixed at a maximum of 172 francs 50 centimes (\$33.58), to cover both hull and machinery, and to diminish gradually for ten years. The amount was to be divided as follows:—

For hulls 145 francs (\$28.22) per ton, with an annual decrease of $4\frac{1}{2}$ francs (\$0.87) per ton for ten years; and for machinery, 27 francs 50
21—1 $\frac{1}{2}$

centimes per 100 kilos (\$2.71) per cwt., with an annual decrease of 75 centimes per 100 kilos (\$0.08) per cwt. for ten years.

The construction bounty for sailing ships of 150 tons and over, was fixed at 40 francs (\$7.78) per ton, and of less than 150 tons at 30 francs per ton (\$5.84).

Only seven-tenths of the bounties are payable in respect of vessels built in foreign ports, the remaining three-tenths are payable in addition, to vessels sailing under the French flag, two-tenths one year after registration and the remaining one-tenth at the end of the second year.

So long as the law of 1902 is in force, these bounties may not be paid in respect of more than 50,000 tons of steam vessels, and 15,000 tons of sailing vessels per annum.

Further, the law of 1906 provided for equipment bounties to be accorded to steamships on the French register (wherever built), at the rate of 4 centimes (\$0.01 per ton, up to 3,000 tons, and 3 centimes (\$0.006 per ton, from 3,000 to 6,000 tons. For sailing vessels the rates are: Up to 500 tons, 3 centimes (\$0.006) per ton; 500 to 1,000 tons, 2 centimes (\$0.004); above 1,000 tons, 1 centime. These equipment bounties are subject to certain conditions as to average daily distance traversed, to quantity of cargo carried, the average speed (the minimum being 9 knots per hour). This equipment bounty is payable in respect of vessels abroad, if not less than two years old, when transferred to the French flag.

Vessels built for subsidized mail services are entitled only to a building bounty of 65 francs (\$12.65) per ton for hulls and 15 francs per 100 kilos (\$1.46) per ton for machinery.

The law is to be in force for 12 years.

GERMAN EMPIRE.

Construction bounties:—These bounties do not take the form of a premium on the construction of ships, but consist of:—

(1) Special customs facilities for goods destined for use in shipbuilding yards.

(2) Preferential railway rates.

(1) Subsection 12 of section 6 of the German Customs tariff law of the 25th December, 1902, exempts from payment of customs duty materials used for construction, repairing or fitting out seagoing or river vessels, except cabin and kitchen furniture. Pleasure boats for rivers and lakes are excluded from the enjoyment of these privileges.

In accordance with the regulations issued in accordance with Bundesrath to give effect to the foregoing provision of the law, the exemption from duty extends to raw materials, as well as to partly manufactured and wholly manufactured articles which are used for the construction (original construction or alteration), the repair or the equipment of seagoing vessels (defined as vessels provided with a fixed seaworthy deck entirely or chiefly destined for traffic on the sea, or its bays, harbours and shallows) as also of lake and river vessels to be used commercially for passenger traffic, for the conveyance of goods, for the in-

SESSIONAL PAPER No. 21

dustrial pursuit of fishing, tugging and dredging, for river works, docks and dock and inspection services, and other public services, also all the auxiliary boats of all the foregoing lake and river craft, but not floating dredges even if they be provided with means of self-propulsion.

Goods for fitting out cabins and kitchens, including even articles which are to be permanently fixed to the body of the vessel, as also articles intended to be used in the manufacture of such goods, are not accorded exemption from duty.

The articles of ships equipment and the materials for shipbuilding, as in respect of which freedom from duty may be claimed, are specified in lists annexed to the regulations, which lists may be supplemented as occasion requires, by decision of the Bundesrath. It is laid down that all articles destined for the artillery and armament of ships of the Imperial navy are to be regarded as articles of equipment whilst in the case of ships of war building in Germany for foreign countries the chief finance officials will decide in every case as to the application of this rule.

The regulations further deal fully with the system of bookkeeping and inspection by which the customs officials are to assume that all the materials and goods thus admitted duty free are actually used for the purpose indicated:

(2) Preferential railway rates are in force on German state railways for certain raw materials and partly manufactured articles used for the construction of German shipping. The railway rates of October, 1905, allowed a preference rate of 1.7 pfennig (\$0.004), plus 12 pfennig (\$0.028), booking free per ton per kilometre, in lieu of the ordinary rate 4.5 pfennig (\$0.01) to 3.5 pfennig (\$0.008), plus 12 pfennig (\$0.028) on the materials in question "in order to assist German iron industry and shipbuilding." The same preferential rate also applies to the following list of articles of the "special tariff for iron and steel": rivets, nails, screws, screw and rivet plates, nuts, wire, files, ships' chains, ships' frames, anchors, and all other articles contained in tariff III used in shipbuilding.

ITALY.

Provision is made by a law which came into operation in July, 1911, for bounties in the form of navigation premiums, construction and repair bounties, and remissions of customs duties, during a period of 15 years. The following are the main provisions of the law:—

The construction bounties are:—

On merchant vessels dredgers, and bridged tugs, with iron and steel hulls, 55 lire (\$10.70), 50 lire (\$9.73), and 45 lire (\$8.75) per gross ton, if launched within 5, 10, 15 years, respectively, from the date of promulgation of the law.

On wooden vessels, 10 lire (\$1.94) per gross ton.

For steam motors and auxiliary apparatus forming an integral part thereof, 15 lire (\$2.92) per indicated horse-power.

For turbine machinery, 17 lire (\$3.30) per shaft.

For boilers and auxiliary apparatus considered as accessories thereof, 12 lire (\$2.31), 220.5 lbs.

For other auxiliary apparatus, 13.5 lire (\$2.61) per 220.5 lbs.

For motor apparatus, 27 lire (\$5.24) per horse-power on shaft.

The law provides that the bounties at the above rates may not be paid in any one year in respect of more than 40,000 gross tons in the case of steamships, and 1,600 gross tons in the case of sailing vessels of iron and steel; 8,000 tons in the case of wooden sailing vessels, 40,000 indicated horse-power, in the case of engines, 2,500 tons of boilers; and 800 tons of auxiliary apparatus. The repair bounties are fixed at a maximum of \$42,836.08 per annum.

Remission of Customs duties:—The law further provides that ship constructors in Italy may import free of duty one-quarter of the metallic material necessary for the construction of the hulls of merchant ships, dredgers and bridged tugs built at the order of Italians and intended for sea, lake, lagoon or river use and provided that this quarter does not exceed 120 kilograms per ton of the gross tonnage. A quarter of the metallic materials necessary for the transformation of vessels, resulting in an increase of the gross tonnage, may also be imported duty free, provided that such quarter does not exceed 120 kilogrammes for each ton added to the vessel.

The law also allows temporary duty free admission in respect of (a) foreign metallic materials employed in the construction of the hulls, machinery boilers and auxiliary apparatus of merchant vessels ordered by foreigners, or in the construction of iron and steel craft destined for exportation, or of war or other vessels ordered by foreign governments from Italian shipyards; (b) articles of equipment or armament for the above-mentioned vessels; (c) their machinery and boilers or parts thereof, and (d) foreign metallic materials, machinery and boilers, complete, or separate parts thereof, to be employed in the repair or transformation in Italy, of war or other vessels belonging to foreign governments.

Italian shipbuilders may claim this privilege of temporary admission in respect of materials for vessels ordered by Italians if they renounce the other customs and construction bounties accorded by the law.

The quantities in respect of which the remission of customs duties may be made in any one year are limited by the law, and the maximum annual total of construction bounties (including the loss of customs revenue other than by temporary admission) is fixed at \$934,270.40. This with the navigation premiums, repair bounties, and a small sum for the expenses of administering the law, make a total authorized expenditure of \$1,206,916.80.

JAPAN.

The bounty payable on tonnage constructed locally is regulated by the provisions of the law for the encouragement of shipbuilding which came into force on January 1, 1910.

By the provisions of this law, only those ships are eligible to receive a bounty which are constructed by Japanese subjects, or by firms which have only Japanese subjects as members or shareholders.

Vessels receiving bounties must be built of steel and be of 1,000 tons or more, gross tonnage. They must be constructed under supervision in accordance with the shipbuilding regulations drawn up by the Minister of Communications.

SESSIONAL PAPER No. 21

The rates are within the limits of yen 11.00 (\$5.46) and yen 22.00 (\$10.93) per ton of the gross tonnage of the hull.

Ships are divided into two classes and four grades for the purposes of the subsidy, viz.:—

Class A. Ships with sleeping accommodation for 50 or more 1st or 2nd class passengers, or having accommodation for one or more 1st or 2nd class passengers per 100 tons of gross tonnage.

Class B. Ships not coming under Class A.

Grade 1. Ships coming under grade 1 of the shipbuilding and survey regulations, with the proper equipment for ocean voyages.

Grade 2. Ships coming under grade 2 of the same regulations.

Grade 3. “ “ 3 “

Grade 4. “ “ 4 “

The following are the rates payable per gross ton:—

	Grade 1.	Grade 2.	Grade 3.	Grade 4.
	Yen. ¹	Yen.	Yen.	Yen.
Class A.....	22	21	19	14
“ B.....	19	18	16	11

¹ Yen=49c.

If the engines are built with the vessel, or provided the sanction of the Minister of Communications has been obtained before hand—at any other works in Japan, a further bounty of yen 5.00 per actual horse-power is to be granted.

Except in accordance with regulations laid down by the Minister of Communications, foreign manufactured articles may not be used for the hull, engines, or equipment of vessels which are to receive shipbuilding encouragement bounties.

In constructing the hull or machinery for a vessel which is to receive the subsidy, foreign made materials may not be used except for the following parts:—

- (1) Stem, sternpost, rudder and rudder tiller, rudder post quadrant, rudder pintles used for vessels of 3,000 tons or more.
- (2) Triple screw shaft bearing.
- (3) All stanchions not less than 7" in diameter.
- (4) All kinds of springs.
- (5) Corrugated and plain or flanged furnaces.
- (6) Rotor (wheel, spindle or shaft, blades and bracket of turbine engine).

Patent articles or articles of new design made abroad can only be used in the construction of hull or machinery with the special permission of the Minister of Communications.

The following articles used in the equipment of a vessel which is to enjoy the subsidy must not be foreign made: Hemp and manila rope, articles made of canvas, windlass, cargo winches, steering engine and gear, anchor chains, wire

7 GEORGE V, A. 1917

ropes, hawsers, etc., centrifugal pumps, hand bilge pumps, fire pumps, boat davits and other davits, boat and lifesaving gear; sky-lights and cabin ports, ventilators, electric apparatus, auxiliary condensers; steam pumps, ash ejectors, dynamos, and valves and cocks.

There is a similar proviso to the one above mentioned with regard to foreign patented articles or those of new design.

NORWAY.

The shipbuilding bounties which are granted in respect of tonnage constructed in Norway on Norwegian or foreign account, are intended to cover only the amount of customs duty on imported materials used in the construction of vessels, and are fixed by customs law at the following rates.

(a) For steamships with main engines and boilers fitted in Norwegian workshops, of iron or steel, 2s. 3d. (54c.) per gross register ton; of wood, 1s. 8d. per gross register ton.

(b) For steamships, without main engines and boilers, but otherwise completely fitted, and for sailing vessels, of iron and steel, 1s. 8d. (40c.) per gross register ton, of wood, 1s. 1½d. (26c) per gross register ton.

RUMANIA.

Materials for shipbuilding are admitted free of customs duty.

RUSSIA.

The estimates of the department of mercantile marine included for 1909 and subsequent years a sum of \$51,428.52 "Measures for the encouragement of shipbuilding." Formerly no bounties on tonnage whether constructed locally or purchased abroad, had been granted to Russian shipping. In June, 1912, a special law was enacted for the granting of bounties for the construction and repair of mercantile vessels. The bounties are granted to shipbuilding firms situated within the Russian Empire (but not in England or areas in which there is duty-free importation of materials and machinery for the construction and equipment of vessels) for every merchant vessel constructed of metal and intended for use in foreign waters or on the Danube and tributaries, upon registry of such a vessel at a Russian port, and provided that it was laid down subsequent to the promulgation of the law. The following table shows the rates of bounty.

RATE OF BOUNTY PER GROSS TON.

Gross Tonnage.	Vessels mechanically propelled.				Sailing vessels with auxiliary mechanical propulsion.		
	£	s.	d.	\$ cts.	£	s.	d.
Up to 125 tons.....	11	1	6	(53 90)	8	17	4
126 to 300 tons.....	10	11	0	(51 33)	8	8	11
301 to 500 tons.....	10	0	6	(48 78)	8	0	6
501 to 725 tons.....	9	10	0	(46 23)	7	12	0
726 to 1,000 tons...	8	19	6	(43 67)	7	3	7
1,001 to 1,400 tons.	8	9	0	(41 12)	6	15	1
1,401 to 2,000 tons	7	18	6	(38 40½)	6	6	8
2,001 to 3,000 tons.	7	8	0	(36 00)	5	18	3
Over 3,000 tons....	6	17	6	(33 45)	5	9	9

SESSIONAL PAPER No. 21

Further bounties at the rate of £3 14s. 0d. per indicated horsepower are to be granted in respect of the installation of new main or auxiliary machinery in the vessels for which construction bounties are accorded.

In the case of repairs the bounties to be paid are for new boilers, etc., 3s. 2d. per 36 lbs. of metal used; for new main or auxiliary machinery 11s. 7d. per 36 lbs.

After 10 years have lapsed from the promulgation of the law, all the above-mentioned bounties are to be reduced by 6 per cent annually.

Regulations issued under this law provide that the use of foreign materials in the construction of the hull or machinery of vessels does not deprive the builders of their claim to the bounties; but the special bounties for new machinery or auxiliary engines are to be granted only, if the machinery be of Russian manufacture, though the use of such as are not manufactured in Russia (and are so specified in a list published by the Ministry of Commerce) is permitted.

It is understood that the sum of £73,889 is to be included in the 1913 budget for the bounties under the provision of this law.

SPAIN.

Spanish shipbuilders pay the full customs duties on material imported, but receive the following bounties:—

- (1) Per ton gross of all wooden ships constructed to navigate without motive power of their own, 80 pesetas (£3.4.0.).
- (2) Per ton gross of wooden ships constructed to navigate with their own power, 100 pesetas (£3.19.3 $\frac{3}{4}$).
- (3) Per gross ton of iron or steel ships without motive power (dredges, floating cranes, hoppers, etc.) 120 pesetas (£4.16.0.).
- (4) Per ton gross of iron or steel cargo boats, 160 pesetas (£6.8.0.). The same bounty is paid on the construction of iron or steel fishing boats.
- (5) Per ton gross of iron or steel vessels constructed to carry both cargo and passengers, 170 pesetas (£7.16.0.).
- (6) Per gross ton of iron or steel vessels constructed for passenger traffic 185 pesetas (£7.8.0.). An additional 10 per cent is paid on every knot in excess of 14 attained, in trials undergone by the vessel when carrying half her maximum cargo.

The above scales of bounties have been established in 1909; the following year was the first in which payments were made to shipbuilders. They amounted on that year to a total of 738,432 pesetas (£29,537) = \$143,746.73.

SWEDEN.

Materials required for use in Swedish shipbuilding yards for the construction or repair of ships of over 40 tons for use in the Swedish Mercantile Marine, or of ships under 40 tons for immediate sale abroad, may be admitted free of customs duty.

URUGUAY.

Under a law of 1905, which was to be in force for 25 years, shipbuilding yards and workshops, shipways and drydocks may import free of customs duties, all materials requisite for their erection, equipment or working.

UNITED STATES.

By section 19 of the United States Tariff Act of 1909, all materials of foreign origin intended for the construction of vessels in the United States may be imported free of customs duty. But vessels which have so benefited in construction, may not engage in the General Coastwise trade for six months in each year, though they may engage in the trade between Atlantic and Pacific ports of the United States.

SHIPPING DESTROYED SINCE THE OUTBREAK OF WAR.

Statistics dealing with the matter of shipping during the year just ended would be altogether incomplete without a reference to the number of vessels lost and destroyed as the result of coming in contact with mines or by enemy submarines.

A statement prepared by Admiral Sir Cyprian Bridge on Merchant shipping losses up to the 30th March, 1916, is as follows:—

STEAMSHIPS.			
Nationality.	No.	Tonnage.	
British.....	379	1,320,000	
French.....	41	140,000	
Belgium....	10	30,000	
Russian.....	27	42,000	
Italian.....	21	60,000	
Japanese....	3	19,000	
SAILING VESSELS.			
British..	31	19,000	
French..	12	18,000	
Russian.....	8	7,000	
Italian..	6	3,000	
		<hr/>	1,658,000
TRAWLERS.			
British.....	237		
French.....	7		
Belgium.....	2		

Losses to neutrals were as follows:—

STEAMERS.		
Norway.....	50	22,000
Denmark.....	18	33,000
Sweden.....	33	42,000
Holland.....	22	74,000
United States.....	6	16,000
Greece.....	11	22,000
Spain.....	4	9,000
Persia.....	1	750
Portugal.....	1	625
SAILING VESSELS.		
Norway.....	22	22,000
Denmark.....	10	1,600
Sweden.....	7	2,000
Holland.....	2	225
United States.....	1	176
		<hr/>
		319,376
		<hr/>
		1,977,376
TRAWLERS.		
Denmark.....	1	
Holland.....	7	

SESSIONAL PAPER No. 21

From the foregoing it is observed that the loss to British shipping is less than 4 per cent of the total number of vessels under the British flag and slightly over 6 per cent of their total tonnage. The construction of new vessels in Great Britain and France during the period since the war began reveals the comforting fact that war losses have been virtually made good.

During the year 1915, Great Britain added 88 steam vessels of a tonnage of 344,000 tons to her register. In the same period Russia and Italy show an increase while France was short only 12,500 tons. While the losses have been great, it would be incorrect to ascribe the shortage of tonnage to the action of enemy mines and submarines. Rather is it due to the very great requirements of the Naval and Military forces. Less than one month ago, it was estimated that no fewer than 3,300 merchant vessels were thus engaged.

LICENSING OF SHIPS.

In order to better conserve and control available ships, the Board of Trade as far back as December 1, 1915, took the necessary steps to provide by Order in Council, that no British registered steamers of upwards of 500 gross tons should engage in the carrying of cargo from one foreign port to another foreign port unless the owners or charterers of such vessel should be granted a license to so trade.

The Order in Council alluded to authorized and directed the President of the Board of Trade to appoint persons to carry out and give effect to the provisions of the Order and to grant licenses when and where desirable. The said Order in Council was supplemented on the 15th February last by a further Order in Council prohibiting as from the first day of March last, all British registered steamers in excess of 500 gross tons, except those engaged in the coasting trade of Great Britain, from proceeding on any voyage without first obtaining a license.

There were at that time on the Canadian register upwards of 300 steamers the gross tonnage of each exceeding 500 tons. These or any number of them, were free to engage without interference in any trade between one foreign port and another foreign port, or between any foreign port and any port in Canada and *vice versa*. Having regard to the conditions then and now existing, it was considered undesirable that Canadian registered vessels of upwards of 500 gross tons should be permitted to engage in any foreign trade without the knowledge or consent of the government. It was therefore provided by Order in Council of the 11th March, 1916, that as from the first day of April, 1916, all Canadian registered steamers whose gross tonnage exceeds 500 tons be prohibited from proceeding on any voyage excepting voyages from a port in Canada to another port in Canada and from a port in Canada to a port in the United States and *vice versa*, unless a license to do so has been granted to, or in favour of the owners or charterers of such steamships.

By the terms of the Order in Council referred to, the Minister of Marine and Fisheries was authorized and directed to appoint a committee with power to issue licenses. The Minister in accordance with this authorization and direction, appointed the Deputy Minister of Marine and Fisheries, the Deputy Minister

7 GEORGE V, A. 1917

of the Naval Service, the Commissioner of Customs and the Deputy Minister of Trade and Commerce a Committee to carry out the purposes of the Order in Council.

VESSELS TRANSFERRED FROM CANADIAN REGISTRY DURING THE YEAR.

The total tonnage transferred from the Canadian Register during the twelve months ending March 31, 1916, was 25,834. The number of vessels representing the aggregate tonnage was 42. Fifteen vessels of an aggregate tonnage of 4,780 gross tons were transferred to foreign registers—fourteen to the United States and one to Russia. Twenty-seven vessels representing 20,964 gross tons were transferred to British registry outside of Canada as follows:—

United Kingdom	4	8,069 gross tons.
Newfoundland	12	4,338 “
Barbadoes	9	2,845 “
New Zealand	1	1,496 “
Shanghai	1	4,216 “

It will be observed that the transfers of Newfoundland and Barbadoes registers constitute the principal changes during the year. It is generally understood that a large proportion of these transfers was made with the sole purpose in view of securing immunity from some of the provisions of the Canada Shipping Act, Chapter 113, R.S.C. Section 95 of said Act provides that no ship registered in Canada over one hundred tons shall go to sea from any port or place in Canada on any voyage not being a coasting voyage, unless the master and first mate or only mate thereof, possesses valid certificates. And section 96 requires that no sailing ship registered in Canada over one hundred tons, and no steamship registered in Canada, shall go from any port or place in Canada on any coasting voyage or be licensed or allowed to ply on any Canadian water unless the master thereof possesses a valid certificate. Section 5 of Chapter 65 of the Acts of 1908 amends the above requirement to the extent that sailing vessels under one hundred and fifty tons do not require to carry a certificated master.

In Newfoundland and Barbadoes there is no legislation of the nature referred to, with the result that vessels registered there may engage in trade from any Canadian port without being obliged to secure the services of certificated masters and mates. It does not appear reasonable that vessels on the Canadian register and their owners should be thus discriminated against, and it is submitted that the matter should engage the attention of Parliament at its next session.

It may be pointed out in further reference to this question that while steamships registered in Canada engaged in foreign, coasting or inland trade are obliged to carry certificated masters (vide sections 95 and 96, Chapter 113, R.S.C.) steamships registered in the United Kingdom may engage in all these trades without any obligation to employ certificated masters. Both the Merchant Shipping Act and the Canada Shipping Act appear to be defective in this respect. Section 92 of the Merchant Shipping Act, 1894, provides that every British

SESSIONAL PAPER No. 21

foreign-going ship when going to sea, *from any port in the United Kingdom*, shall be provided with officers duly certificated. When, however, that ship reaches a Canadian port and undertakes to clear for a foreign, coasting or inland voyage, it is under no obligation to employ duly certificated officers. In the revision and consolidation of the Canada Shipping Act undertaken by this Department two years ago, the result of which is embodied in the Bill entitled "An Act to Consolidate and Amend the Canada Shipping Act," introduced by the Minister of Marine and Fisheries during the session of 1914-15, provision was made to overcome this difficulty and remove what is in reality a discrimination against steamships on the Canadian register. The past two sessions of Parliament have been so occupied with matters and measures relating to the war, that the Government has found it inexpedient to take up consideration of the Bill. Its importance necessarily involves somewhat lengthy consideration by Parliament, but it is hoped that during the next session opportunity will be found to fully deal with it.

COASTING VOYAGES.

The fact that the legislation of Barbadoes does not provide that ships registered in that colony must carry certificated masters and mates, has given rise to a considerable demand in Canada for the enlargement of the area for which coasting certificates are issued. So insistent has this demand become that both during the last and present sessions of Parliament, a Bill was introduced by Mr. John Sinclair, M.P. for Guysboro, Nova Scotia, making provision for the extension of the present limits of a coasting voyage from five degrees north latitude to forty degrees south latitude.

During the parliamentary session of 1898, a Bill was passed extending the limits of a coasting voyage from Cape Hatteras to the present limit—five degrees north latitude. The technical officers of the Department at that time opposed the extension chiefly on the ground that the standard of qualifications required for "coasting certificates" was not sufficiently high to insure that applicants for certificates would have the knowledge requisite for the safe navigation of vessels in the area proposed to be included. Notwithstanding this opposition, the measure became law.

As regards the measure now before Parliament, the Departmental view remains the same and the same objections are being urged.

NOTE.—The Bill referred to has in the meantime been passed by both Houses of Parliament and is now law. It provides as follows:—

"Section three of chapter sixty-five of the Acts of 1908 is repealed and the following is substituted therefor:—

"Coasting voyage" means a voyage between any port or place in Canada, and any other port or place in Canada, or in Newfoundland, Labrador, or St. Pierre or Miquelon, or any port or place in the United States of America or Mexico or Central America or in the West Indies, or on the eastern coast of South America not further south than forty degrees south latitude; or on the coast of the Territory of Alaska or of the western coast of South America not further than forty degrees south latitude.

STATISTICS OF CANADIAN SHIPPING.

STATEMENT showing the number of Vessels and number of Tons on the Registry Books of the Dominion of Canada, on December 31, 1915.

Ports.	SAILING VESSELS.			STEAM VESSELS.		
	No.	Gross Tonnage.	Net Tonnage.	No.	Gross Tonnage.	Net Tonnage.
Ontario.						
Amherstburg.....	7	1,518	1,484	13	922	492
Belleville.....	3	241	217	11	241	144
Bowmanville.....	2	344	316			
Brockville.....	2	842	771	25	1,405	937
Chatham.....	5	596	586	11	934	510
Cobourg.....	3	659	608	1	1,183	810
Collingwood.....	5	1,122	1,122	58	22,789	15,480
Cornwall.....				5	170	107
Deseronto.....	5	403	370	7	383	250
Dunville.....	1	85	57			
Fort William.....	1	413	413	2	4,183	2,539
Goderich.....	10	1,155	1,155	31	1,461	937
Hamilton.....	2	308	308	27	21,205	13,581
Kenora.....	7	580	580	85	3,027	1,913
Kingston.....	72	14,005	13,102	123	11,184	6,551
Midland.....	7	3,681	3,166	36	29,389	19,314
Napanee.....	1	122	122			
Oakville.....	1	26	26			
Ottawa.....	151	20,320	19,465	290	47,241	25,383
Owen Sound.....	8	2,637	2,299	38	3,420	2,308
Peterboro.....	19	1,553	1,553	59	1,472	988
Picton.....	9	2,790	2,571	14	5,000	3,366
Port Arthur.....	41	16,716	16,152	72	40,548	25,648
Port Burwell.....	1	65	65	10	343	191
Port Dover.....	3	217	217	15	455	298
Port Hope.....	7	889	889	6	116	75
Port Stanley.....				27	1,149	751
Prescott.....	10	1,902	1,719	13	2,295	1,542
Sarnia.....	11	3,547	3,288	35	23,864	14,949
Southampton.....	1	96	50	12	443	301
Sault Ste Marie.....	39	8,305	7,954	54	18,152	11,767
St. Catharines.....	28	6,553	5,944	51	1,449	1,255
Simcoe.....	2	36	36	2	35	18
Toronto.....	83	16,665	14,809	307	80,920	49,858
Walden.....	13	1,643	1,599	14	635	435
Whitby.....	1	190	190			
Windsor.....	29	2,861	2,763	20	4,447	2,767
Lindsay.....	19	1,124	1,124	28	628	416
Total.....	609	114,209	107,090	1,502	331,087	205,881
Prince Edward Island.						
Charlottetown.....	130	8,471	8,023	28	7,571	3,495
British Columbia.						
New Westminster.....	103	10,925	10,914	203	8,420	5,250
Prince Rupert.....	2	1,450	1,299	19	2,753	1,672
Vancouver.....	205	31,803	31,146	718	52,673	32,717
Victoria.....	114	22,672	21,455	279	67,542	40,382
Total.....	424	66,850	64,814	1,219	131,388	80,021
Saskatchewan.						
Prince Albert.....	1	145	145	4	660	385
Manitoba.						
Winnipeg.....	13	2,696	2,696	71	7,316	4,784
Yukon.						
Dawson.....	1	556	556	10	2,715	1,739

SESSIONAL PAPER No. 21

STATISTICS OF CANADIAN SHIPPING—Continued.

STATEMENT showing the number of Vessels and number of Tons on the Registry Books of the Dominion of Canada, on December 31, 1915—*Concluded.*

PORTS.	SAILING VESSELS.			STEAM VESSELS.		
	No.	Gross Tonnage.	Net Tonnage.	No.	Gross Tonnage.	Net Tonnage.
New Brunswick.						
Chatham.....	389	8,175	7,983	92	3,792	2,294
Dorchester.....	3	355	340	2	8	6
Moncton.....	6	338	315	2	119	60
Richibucto.....	22	572	516	14	273	198
Sackville.....	4	302	265	3	65	45
St. Andrews.....	162	2,872	2,850	34	792	532
St. John.....	225	23,407	22,627	110	28,234	18,188
	811	36,021	34,896	257	33,283	21,323
Nova Scotia.						
Amherst.....	3	148	131	3	169	95
Annapolis Royal.....	29	3,175	3,175	6	328	171
Arichat.....	99	2,657	2,622	15	260	229
Barrington.....	77	1,970	1,910	7	152	117
Canso.....	43	799	799	3	163	70
Digby.....	104	3,948	3,750	14	397	277
Guysboro.....	7	365	353			
Halifax.....	324	13,733	13,264	116	16,178	9,550
Liverpool.....	52	3,835	3,469	26	1,782	874
Lunenburg.....	300	27,058	22,518	102	2,198	1,762
Maitland.....	12	2,719	2,687	1	88	59
Parrsboro.....	47	9,517	8,650	8	810	524
Pictou.....	15	1,227	1,128	19	1,332	745
Port Hawkesbury.....	66	1,477	1,461	3	48	41
Port Medway.....	11	1,018	952	4	62	58
Shelburne.....	71	4,204	3,853	17	677	499
Sydney.....	85	5,131	4,783	39	5,065	3,158
Truro.....				1	18	7
Weymouth.....	32	1,639	1,498	8	316	238
Windsor.....	41	19,604	17,997	16	2,438	1,116
Yarmouth.....	216	6,371	6,115	45	10,585	4,862
	1,634	110,595	101,115	453	43,066	24,452
Quebec.						
Gaspe.....	19	1,048	1,048			
Magdalen Islands.....	12	446	446	4	1,182	601
Montreal.....	465	102,605	99,766	362	147,613	94,013
Paspebiac.....	6	288	245	5	104	69
Quebec.....	466	36,237	35,507	168	34,746	20,043
Sorel.....	34	19,022	9,512	49	13,014	6,647
	1,002	159,646	146,524	588	196,659	121,373
Recapitulation.						
N.B.....	811	36,021	34,896	257	33,283	21,323
N.S.....	1,634	110,595	101,115	453	43,066	24,452
Que.....	1,902	159,646	146,524	588	196,659	121,373
Ont.....	609	114,209	107,090	1,502	331,087	205,881
P.E.I.....	130	8,471	8,023	28	7,571	3,495
B.C.....	424	66,850	64,814	1,219	131,388	80,021
Man.....	13	2,696	2,696	71	7,316	4,784
Yukon.....	1	556	556	10	2,715	1,739
Sask.....	1	145	145	4	660	385
	4,625	491,428	465,859	4,132	753,745	463,453

COMPARATIVE STATEMENT showing the number of Vessels and number of Tons on the Registry Books of the Dominion of Canada, on the 31st December, in each Year from 1874 to 1915 both inclusive.

Province.	1874.		1875.		1876.		1877.		1878.	
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
New Brunswick	1,144	294,741	1,133	307,926	1,154	324,513	1,133	329,457	1,142	335,965
Nova Scotia.....	2,787	479,669	2,786	505,144	2,867	529,252	2,961	541,579	3,003	553,368
Quebec.....	1,837	218,946	1,841	222,965	1,902	228,502	1,951	248,399	1,676	248,349
Ontario.....	815	113,008	825	114,990	889	123,947	936	131,761	958	135,440
P. E. Island.....	312	48,588	335	50,677	338	50,692	342	55,547	322	54,250
B. Columbia.....	35	3,611	40	3,685	40	3,809	43	3,479	51	4,482
Manitoba.....			2	178	2	178	6	246	17	1,161
Total.....	6,966	1,158,363	6,952	1,205,565	7,192	1,260,893	7,362	1,310,468	7,169	1,333,015
	1879.		1880.		1881.		1882.		1883.	
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
New Brunswick	1,135	340,491	1,097	336,976	1,087	333,215	1,065	30,8980	1,107	315,906
Nova Scotia.....	2,975	552,159	2,977	550,448	3,025	558,911	3,026	546,778	3,037	541,715
Quebec.....	1,975	246,025	1,889	233,341	1,830	224,936	1,754	215,804	1,739	216,557
Ontario.....	1,006	136,987	1,042	137,481	1,081	139,998	1,112	137,061	1,133	140,972
P. E. Island.....	298	49,807	288	45,931	273	45,410	248	41,684	241	49,446
B. Columbia...	60	4,701	63	5,049	74	6,296	84	7,687	94	9,046
Manitoba.....	22	1,924	21	1,992	24	2,130	23	2,783	24	2,778
Total.....	7,471	1,332,094	7,377	1,311,218	7,394	1,310,896	7,312	1,260,777	7,375	1,276,440
	1884.		1885.		1886.		1887.		1888.	
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
New Brunswick.	1,096	308,132	1,060	288,589	1,042	269,224	1,027	255,126	1,009	239,332
Nova Scotia.....	2,942	544,048	2,988	541,832	2,929	526,921	2,845	498,878	2,851	485,709
Quebec.....	1,628	202,842	1,631	203,635	1,650	232,556	1,586	189,064	1,498	178,520
Ontario.....	1,184	142,387	1,223	144,487	1,248	140,929	1,275	139,548	1,330	139,502
P. E. Island.	234	39,213	227	36,040	225	30,658	225	29,031	218	26,586
B. Columbia...	116	11,403	123	11,834	134	11,900	149	12,789	167	14,249
Manitoba.....	55	5,722	61	5,439	65	5,578	71	5,871	69	5,744
Total.....	7,255	1,253,747	7,315	1,231,856	7,293	1,217,766	7,178	1,130,307	7,142	1,089,642
	1889.		1890.		1891.		1892.		1893.	
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
New Brunswick.	1,013	218,873	981	209,460	969	193,193	946	181,779	1,010	156,086
Nova Scotia.....	2,855	464,431	2,793	464,194	2,778	461,758	2,731	425,690	2,715	396,263
Quebec.....	1,455	168,500	1,399	164,003	1,404	162,330	1,408	162,638	1,426	161,121
Ontario.....	1,352	141,839	1,312	138,738	1,345	138,914	1,347	141,750	1,370	146,665
P. E. Island....	224	25,566	231	26,080	145	23,316	196	22,706	188	20,970
B. Columbia.....	176	15,241	196	16,024	246	19,767	298	23,448	315	24,900
Manitoba.....	77	6,091	79	6,475	78	6,197	81	6,118	89	6,534
Total.....	7,152	1,040,481	6,991	1,024,974	7,015	1,005,475	7,007	964,129	7,113	912,539

SESSIONAL PAPER No. 21

COMPARATIVE STATEMENT showing the number of Vessels and number of Tons on the Registry Books of the Dominion of Canada, etc.—*Continued.*

Province.	1894.		1895.		1896.		1897.		1898.	
	Vessels	Tons.	Vessels	Tons.	Vessels	Tons.	Vessels	Tons.	Vessels	Tons.
New Brunswick.	1,003	136,257	975	122,417	964	115,506	923	103,584	903	89,257
Nova Scotia.....	2,710	371,432	2,683	343,356	2,669	317,526	2,204	283,056	2,167	262,176
Quebec.....	1,427	160,590	1,454	158,776	1,469	158,649	1,480	158,077	1,378	144,447
Ontario.....	1,480	148,525	1,508	148,609	1,525	146,522	1,424	135,349	1,452	134,180
P. E. Island....	191	19,650	190	19,323	174	16,540	174	15,812	178	15,979
B. Columbia....	336	26,455	346	25,988	363	26,622	364	28,604	444	40,304
Manitoba.....	98	6,715	106	7,307	115	7,934	115	7,272	121	7,439
Yukon District										
Total.....	7,245	869,624	7,262	825,776	7,279	789,299	6,684	731,754	6,643	693,782

	1899.		1900.		1901.		1902.		1903.	
	Vessels	Tons.	Vessels	Tons.	Vessels	Tons.	Vessels	Tons.	Vessels	Tons.
New Brunswick.	920	86,288	927	78,708	915	75,293	917	64,605	929	59,508
Nova Scotia.....	2,121	243,457	2,121	226,817	1,980	214,560	2,037	212,967	2,069	216,053
Quebec.....	1,375	144,586	1,247	138,136	1,265	142,664	1,288	136,660	1,228	138,570
Ontario.....	1,488	135,234	1,610	141,112	1,635	145,227	1,699	156,449	1,778	169,086
P. E. Island....	171	14,660	176	14,251	180	14,729	156	13,464	164	13,739
B. Columbia....	488	44,415	515	51,095	676	62,102	584	58,292	639	76,215
Manitoba.....	126	9,108	128	7,147	130	7,445	139	7,536	139	7,695
Yukon District..	9	1,604	11	2,268	11	2,463	16	2,640	14	2,281
Saskatchewan										
Total.....	6,698	679,35	26,735	659,534	6,792	664,483	6,836	652,613	7,020	683,147

	1904.		1905.		1906.		1907.		1908.	
	Vessels	Tons.	Vessels	Tons.	Vessels	Tons.	Vessels	Tons.	Vessels	Tons.
New Brunswick.	933	54,855	938	49,145	939	44,471	927	69,463	938	66,402
Nova Scotia.....	2,066	211,972	2,121	198,976	2,159	187,328	2,074	173,950	2,052	164,919
Quebec.....	1,287	140,339	1,301	141,406	1,344	143,340	1,338	166,133	1,384	172,975
Ontario.....	1,886	176,430	1,942	178,848	1,978	180,340	2,011	184,328	2,028	192,970
P. E. Island....	161	12,200	158	11,924	149	10,761	145	9,815	154	10,387
B. Columbia....	666	77,105	712	79,954	782	77,746	872	83,792	939	87,056
Manitoba.....	141	7,765	142	7,809	149	8,341	144	8,247	87	4,341
Yukon District..	12	2,172	11	1,763	11	1,763	13	2,670	16	2,984
Saskatchewan					1	89	4	290	4	290
Total.....	7,152	682,838	7,325	669,825	7,512	654,179	7,528	698,688	7,602	702,324

	1909.		1910.		1911.		1912.		1913.	
	Vessels	Tons.	Vessels	Tons.	Vessels	Tons.	Vessels	Tons.	Vessels	Tons.
New Brunswick.	937	62,984	951	59,637	966	55,872	1,001	57,369	1,031	60,020
Nova Scotia.....	2,058	160,286	2,054	149,737	2,105	142,631	2,158	143,295	2,106	138,107
Quebec.....	1,432	175,370	1,499	189,945	1,511	193,682	1,566	227,048	1,628	247,225
Ontario.....	2,061	208,652	2,027	227,457	2,014	236,877	2,017	253,376	2,012	279,642
P. E. Island....	150	10,154	150	10,100	149	9,683	148	9,577	149	10,071
B. Columbia....	1,020	92,746	1,109	105,414	1,227	122,264	1,376	136,618	1,506	153,06
Manitoba.....	90	5,087	94	5,565	96	6,373	95	6,096	93	5,545
Yukon District..	16	2,984	16	2,784	15	2,708	14	2,543	15	2,940
Saskatchewan..	4	290	4	290	5	356	5	356	5	356
Total.....	7,768	718,553	7,904	750,929	8,088	770,446	8,380	836,278	8,545	896,965

7 GEORGE V, A. 1917

COMPARATIVE STATEMENT showing the number of Vessels and number of Tons on the Registry Books of the Dominion of Canada, etc.—*Concluded.*

Provinces.	1914.		1915.	
	Vessels.	Tons.	Vessels.	Tons.
New Brunswick	1,052	55,522	1,068	56,219
Nova Scotia	2,098	135,053	2,087	125,567
Quebec	1,663	259,143	1,590	267,897
Ontario	2,100	314,660	2,111	312,971
P. E. Island	149	10,029	158	11,518
B. Columbia	1,591	147,192	1,643	144,835
Manitoba	103	7,999	84	7,480
Yukon District	11	2,295	11	2,295
Saskatchewan	5	529	5	530
Totals	8,772	932,422	8,757	929,312

LIST of Ports at which Vessels may be Registered, showing the number of New Vessels Built and Registered in the Dominion of Canada, during the Year ended December 31, 1915.

PROVINCE OF NEW BRUNSWICK.			PROVINCE OF ONTARIO.		
Name of Port.	Total Number of Sailing Ships and Steamers.	Total Net Tonnage of Sailing Ships and Steamers.	Name of Port.	Total Number of Sailing Ships and Steamers.	Total Net Tonnage of Sailing Ships and Steamers.
Chatham	20	310	Amherstburg		
Dorchester			Bellville		
Moncton			Bowmanville		
Richibucto			Brockville	1	7
Sackville			Chatham		
St. Andrews	1	7	Coboarg		
St. John	1	797	Collingwood		
Total	22	1,114	Cornwall		
			Deseronto		
			Dunnville		
			Fort William		
			Goderich		
			Hamilton	1	11
			Kenora	6	80
			Kingston	1	82
			Lindsay		
			Midland	4	801
			Napawee		
			Oakville		
			Ottawa	6	714
			Owen Sound		
			Peterborough		
			Pictou		
			Port Arthur	1	401
			Port Burwell	2	76
			Port Dover		
			Port Hope		
			Port Stanley	2	65
			Prescott		
			Sarnia		
			Southampton		
			Sault Ste. Marie	4	483
			St. Catharines		
			Simcoe		
			Toronto	10	1,989
			Wallaceburg		
			Whitby		
			Windsor		
Total	51	2,982	Total	38	4,709

SESSIONAL PAPER No. 21

LIST of Ports at which Vessels may be Registered, showing the number of new Vessels Built and Registered, etc.—*Concluded.*

PROVINCE OF QUEBEC.			YUKON DISTRICT.		
Name of Port.	Total Number of Sailing Ships and Steamers.	Total Net Tonnage of Sailing Ships and Steamers.	Provinces.	Total Number of Sailing Ships and Steamers.	Total Net Tonnage of Sailing Ships and Steamers.
Amherst (Magdalen Islands)			Dawson City.....	Nil.	Nil.
Gaspé..	31	5,591	SASKATCHEWAN.		
Montreal...	14	1,543	Prince Albert...	Nil.	Nil.
Paspébiac..	4	656	SUMMARY.		
Quebec...			New Brunswick.....	22	1,114
Sorel...			Nova Scotia.....	51	2,982
Total....	49	7,790	Quebec ...	49	7,790
PROVINCE OF PRINCE EDWARD ISLAND.			Ontario ...	38	4,709
Charlottetown...	2	24	Prince Edward Island.	2	24
PROVINCE OF BRITISH COLUMBIA.			British Columbia.. . . .	79	2,057
New Westminster.....	22	633	Manitoba.....	5	156
Prince Rupert.....	2	11	Yukon District.....		
Vancouver.....	41	823	Saskatchewan.		
Victoria.....	12	566	Total.....	246	18,832
Total.....	79	2,057			
PROVINCE OF MANITOBA.					
Winnipeg.....	5	156			

7 GEORGE V, A. 1917

COMPARATIVE STATEMENT of New Vessels Built and Registered in the Dominion of Canada during the Year ended December 31, in each Year, from 1874 to 1915, both inclusive. 1

Provinces.	1874.		1875.		1876.		1877.		1878.	
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
New Brunswick.....	90	42,027	65	33,483	61	31,040	54	31,158	56	27,368
Nova Scotia.....	175	84,480	177	67,106	194	58,771	219	47,980	166	49,784
Quebec.....	73	20,796	103	22,825	51	17,800	62	19,253	46	10,870
Ontario.....	20	10,797	53	7,760	47	5,397	28	3,316	30	2,409
Prince Edward Island.....	88	24,634	87	13,888	62	14,571	62	17,026	38	10,382
British Columbia.....	5	276			1	121	2	204	2	00
Manitoba.....							3	48	1	5
	481	183,010	481	151,012	416	127,700	430	118,985	339	100,873
Add new vessels built in Canada which proceeded to the United Kingdom under a Governor's pass without being registered	6	7,746			3	2,721	2	1,943	1	663
Add new vessels which left Quebec for registration in Germany.....					1	480				
Total.....	487	190,756	481	151,012	420	130,901	432	120,928	340	101,563

Provinces.	1879.		1880.		1881.		1882.		1883.	
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
New Brunswick.....	43	19,067	63	18,896	57	18,259	66	16,820	72	21,103
Nova Scotia.....	126	39,208	126	31,257	150	40,465	117	26,711	202	35,765
Quebec.....	29	7,421	37	8,219	56	5,673	26	6,785	42	6,594
Ontario.....	42	2,464	44	3,610	54	5,111	55	4,369	34	4,311
Prince Edward Island..	20	5,279	21	3,359	15	4,351	15	3,508	17	5,343
British Columbia.....	5	788			2	85	8	1,631	5	849
Manitoba.....			1	100	3	116	1	289	2	125
	265	74,227	288	65,441	337	74,060	288	60,113	374	74,090
Add new vessels built in Canada which proceeded to the United Kingdom under a Governor's pass without being registered							1	1,029		
Add new vessels which left Quebec for registration in Germany.....										
Total.....	265	74,227	288	65,441	337	74,060	289	61,142	374	74,090

SESSIONAL PAPER No. 21

COMPARATIVE STATEMENT of New Vessels Built and Registered in the Dominion of Canada during the Year ended December 31, etc.—*Continued.*

Provinces.	1884.		1885.		1886.		1887.		1888.	
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
New Brunswick.	46	12,888	34	7,736	34	4,931	15	2,909	32	2,530
Nova Scotia.....	178	42,032	102	24,703	93	20,948	87	12,310	116	2,965
Quebec.....	32	3,815	29	4,556	27	2,683	28	2,888	23	2,669
Ontario.....	58	4,446	45	4,509	52	2,075	66	2,993	62	5,095
P. E. Island.....	21	5,189	11	1,707	12	1,318	7	601	12	1,412
B. Columbia....	15	675	6	618	8	154	9	376	18	448
Manitoba.....	37	3,366	13	320	3	98	8	439	1	11
Total.....	387	72,411	240	44,179	229	32,207	223	22,516	264	25,30

Provinces.	1889.		1890.		1891.		1892.		1893.	
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
New Brunswick.	50	4,792	35	5,572	43	6,269	21	1,873	119	2,819
Nova Scotia.....	126	19,645	150	33,907	130	35,528	105	16,446	111	15,089
Quebec.....	27	3,759	25	4,880	46	4,200	34	2,620	53	4,220
Ontario.....	45	3,259	41	4,917	44	2,662	34	3,684	49	4,126
P. E. Island.....	12	1,503	12	2,008	5	1,000	9	967	3	634
B. Columbia.....	12	840	15	876	41	2,364	46	2,887	19	944
Manitoba.....	8	548	7	218	3	122	6	296	8	608
Total.....	280	34,346	285	52,378	312	52,145	255	28,773	362	28,440

Provinces.	1894.		1895.		1896.		1897.		1898.	
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
New Brunswick.	40	2,534	27	714	24	627	33	1,738	31	790
Nova Scotia.....	128	8,721	89	4,762	97	7,704	54	4,259	67	4,962
Quebec.....	55	4,412	49	4,335	36	3,969	49	4,227	51	4,139
Ontario.....	64	3,137	52	3,732	38	1,757	50	3,850	46	1,872
P. E. Island.....	3	183	1	196	3	111	3	226	5	372
B. Columbia.....	25	1,900	18	1,709	22	1,466	26	2,429	72	12,228
Manitoba.....	11	356	14	822	7	512	16	365	6	159
Total.....	326	21,243	250	16,270	227	16,146	231	17,094	278	24,522

7 GEORGE V, A. 1917

COMPARATIVE STATEMENT of New Vessels Built and Registered in the Dominion of Canada during the Year ended December 31, etc.—Continued.

Provinces.	1899.		1900.		1901.		1902.	
	Vessels	Tons.	Vessels	Tons.	Vessels	Tons.	Vessels	Tons.
New Brunswick.....	31	798	22	762	25	1,141	23	1,055
Nova Scotia.....	92	7,594	117	9,416	133	14,660	140	14,827
Quebec.....	55	5,943	50	4,301	43	7,421	46	1,990
Ontario.....	52	3,419	58	3,734	62	2,665	60	8,791
Prince Edward Island.....	3	56	3	106	6	589	8	530
British Columbia.....	51	2,734	43	3,837	62	7,728	36	2,550
Manitoba.....	13	554	3	109	3	112	10	137
Yukon District.....			1	61	1	165	3	336
Saskatchewan.....								
Total.....	277	21,098	297	22,326	335	34,481	296	30,216

Provinces.	1903.		1904.		1905.		1906.	
	Vessels	Tons.	Vessels	Tons.	Vessels	Tons.	Vessels	Tons.
New Brunswick.....	24	1,708	25	1,306	25	998	23	431
Nova Scotia.....	135	12,907	99	5,993	100	7,453	154	7,538
Quebec.....	31	1,076	20	3,203	24	1,438	50	3,940
Ontario.....	71	10,719	105	5,167	85	5,735	74	64014
Prince Edward Island.....	6	171	2	185	6	577	4	147
British Columbia.....	56	3,494	48	2,362	51	3,536	82	2,774
Manitoba.....	5	248	3	338	1	44	9	808
Yukon District.....							1	89
Saskatchewan.....								
Total.....	228	30,323	288	18,554	352	19,781	397	21,741

Provinces.	1907.		1908.		1909.		1910.	
	Vessels	Tons.	Vessels	Tons.	Vessels	Tons.	Vessels	Tons.
New Brunswick.....	27	909	32	1,288	14	666	17	397
Nova Scotia.....	109	5,166	84	6,600	75	6,007	72	5,572
Quebec.....	59	10,326	62	7,279	66	5,895	55	7,012
Ontario.....	96	14,444	46	8,695	73	7,973	46	3,612
Prince Edward Island.....	7	215	5	254	1	5	2	23
British Columbia.....	97	7,115	76	4,778	93	4,068	84	5,177
Manitoba.....	3	84	1	9	5	692	5	490
Yukon District.....			2	80				
Saskatchewan.....	2	201						
Total.....	392	38,401	304	28,983	327	25,506	294	22,283

SESSIONAL PAPER No. 21

COMPARATIVE STATEMENT of New Vessels Built and Registered in the Dominion of Canada during the Year ended December 31, etc.—*Concluded.*

Provinces.	1911.		1912.		1913.		1914.	
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
New Brunswick.....	25	774	44	1,092	45	1,114	31	1,319
Nova Scotia.....	136	5,340	126	5,853	67	4,899	56	3,303
Quebec.....	30	2,726	49	5,744	62	8,667	51	6,753
Ontario.....	42	10,086	71	11,170	38	15,572	78	23,167
P. E. Island.....	4	61	1	34	3	804	2	35
B. Columbia.....	98	7,781	128	10,647	128	9,090	97	5,867
Manitoba.....	3	902	1	546	1	18	11	2,899
Yukon District.....							1	3
Saskatchewan	1	66						
Total.....	339	27,736	420	34,886	344	40,164	327	43,346

		1915.	
		Vessels.	Tons.
N.B..		22	1,114
N.S.....		51	2,982
Que		49	7,790
Ont.		38	4,709
P. E. I		2	24
B.C.....		79	2,057
Man.....		5	156
Yukon Dist			
Sask			
Total.....		246	18,832

STATEMENT showing the number of vessels removed from registry in the Dominion of Canada during the year ended 31st December, 1915, and the cause for such removal.

Sold to foreigners—(U.S.A.).....	14
Wrecked.....	14
Stranded.....	21
Lost.....	14
Broken up, reported out of existence, condemned, dismantled, abandoned, etc.....	215
Abandoned at sea.....	1
Collision.....	2
Foundered.....	7
Burnt.....	24
Transferred to St. John's, Nfld.....	9
“ Barbadoes.....	6
“ G. B.....	3
“ New Zealand.....	1
“ Turk's Island.....	1
Missing.....	1
Registry no longer required.....	2
Sunk by Germans.....	6
Total.....	341

7 GEORGE V, A. 1917

It is estimated that 45,461 men and boys, etc., inclusive of masters, were employed on ships registered in Canada during the year 1915.

STATEMENT showing the Tonnage of each of the Maritime States of the World, compiled from the Reportoire General for 1915-1916.

Nation.	Steamers.	Gross Tonnage of Steamers.	Net Tonnage of Steamers.	Sailing Vessels.	Net Tonnage of Sailing Vessels.	Total Net Tonnage.
British.....	9,296	20,642,554	12,712,380	5,496	800,245	13,512,625
U. S. A.....	1,304	2,876,974	1,951,340	2,151	973,081	2,924,421
Germany.....	1,688	4,144,866	2,497,983	1,435	414,434	2,912,417
Norwegian.....	1,648	1,968,470	1,280,495	1,042	564,158	1,844,653
French.....	1,066	1,956,343	1,105,800	1,090	411,507	1,517,307
Japanese.....	1,080	1,799,840	1,146,255	1,493	191,767	1,338,022
Russian.....	809	1,080,514	647,371	3,601	583,244	1,230,615
Italian.....	636	1,485,909	910,682	1,264	267,800	1,178,482
Holland.....	728	1,541,267	950,217	470	51,379	1,001,596
Canada.....						
Swedish.....	1,060	1,250,948	705,424	1,279	161,297	866,721
Greek.....	419	907,772	505,138	818	144,760	709,898
Austrian.....	387	946,042	584,694	104	7,708	592,402
Spanish.....	579	891,023	542,492	281	32,449	574,941
Danish.....	571	780,158	472,676	776	83,897	556,573
Turkey.....	133	122,296	71,262	966	202,449	273,711
Belgian.....	157	280,611	180,336	11	9,329	189,665
Brazilian.....	292	276,064	167,493	86	15,124	182,617
Argentine.....	192	170,461	100,930	49	19,328	120,258
Portuguese.....	93	80,015	53,214	214	38,981	92,195
Chilian.....	9	100,137	63,331	35	26,263	89,594
Chinese.....	73	100,413	64,655	7	865	65,520
Romanian.....	39	70,373	40,300	3	551	40,911
Peruvian.....	14	32,394	17,754	41	21,001	38,755
Cuban.....	58	33,997	21,427	147	14,983	36,410
Mexican.....	35	38,146	23,308	16	2,483	25,791
Uruguayan.....	23	15,161	8,995	45	16,464	25,459
Bulgarian.....	7	10,490	6,522	2	442	6,964
Honduras.....	6	8,759	5,437	4	546	5,983
Siamese.....	12	9,564	5,887			5,887
Venezuelan.....	9	4,720	2,485	8	1,054	3,539
Sarawak.....	7	4,571	2,791			2,791
Montenegrin.....				8	2,630	2,630
Egyptian.....	8	2,855	1,142	3	1,418	2,560
Persian.....	4	3,669	2,160			2,160
Equatorial.....	1	3,358	2,160			2,160
Haitian.....	5	2,360	1,385			1,385
Paraguay.....	6	2,323	1,237			1,237
Corean.....	1	1,027	796			796
Colombian.....	2	1,056	516	2	242	758
Zanzibar.....	2	1,220	743			743
Panama.....	1	946	452	1	195	647
Talistan.....				4	318	318
Dominican.....				3	288	288
Borneo.....	1	185	121			121
Nicaraguan.....	1	711	112			112
Servian.....	1	264	112			112
Morocco.....	1	529	86			86
Unknown.....	25	76,934	47,293	18	11,258	58,551
	22,553	43,737,290	26,967,449	22,973	5,073,938	32,041,387

*Canada included in British.

SESSIONAL PAPER No. 21

PRIVATE SHIPBUILDING PLANTS OPERATED IN CANADA.

The principal private shipbuilding plants operated in Canada are: Polson Iron Works (Ltd.), Toronto, Ont.; Canadian Vickers (Ltd.), Montreal, P.Q.; Geo. Davie & Son (Ltd.), Quebec, P.Q.; Collingwood Shipbuilding Co., Collingwood, Ont.; Kingston Shipbuilding Co., Kingston, Ont.; Western Dry Dock and Shipbuilding Co. (Ltd.), Port Arthur, Ont.

WESTERN DRY DOCK AND SHIPBUILDING CO., LTD., PORT ARTHUR, ONT.

This plant comprises structural iron shop or punch shop with mould loft, machine shop, boiler shop, blacksmith shop, joiner shop, electrical shop, pipe shop and pattern shop, and is a complete and up-to-date shipyard, capable of building the largest bulk freighters, and the shops are equipped as well to build machinery, steel tanks, boilers and structural iron and steel work of any description.

During last year, owing to business conditions, no new tonnage was built, but repairs were made to 25 vessels in the "dry dock," which is 700 feet by 100 feet, and hoisting engines and traction machinery were manufactured.

The amount of capital invested in this plant is approximately \$1,500,000.

COLLINGWOOD SHIPBUILDING CO., LTD., COLLINGWOOD, ONT.

This shipbuilding plant comprises a large punch shed, boiler shop, machine shop, foundry, blacksmith shop, joiner house, mould loft, carpenter and pattern shop and drawing office.

There are in operation two stone dry docks and six building berths, with room for further extension, capable at present of handling on the slips vessels up to 550 feet in length.

The present valuation of the plant is \$2,000,000.

During the 12 months ending March 31, 1916, the company made repairs to 14 vessels in their docks and completed the construction of a hopper barge 744 tons gross and an oil tank steamer 250 feet by 43 feet by 18 feet of 2,051 gross tons.

The company is at present building 4 oil tank steamers similar to the one completed and a vessel 550 feet by 58 feet by 31 feet of 7,988 gross tons.

In addition to their shipbuilding activities, the company is engaged in the manufacture of 18-pounder shrapnel and 4.5-inch high explosive shell.

THE CANADIAN VICKERS LTD., MONTREAL, P.Q.

This shipbuilding plant includes the floating ship dock the *Duke of Connaught*, 600 feet by 100 feet, with a lifting capacity of 25,000 tons. A covered-in shipbuilding berth 500 feet by 132 feet, fitted with overhead cranes, with a capacity of 4 berths for shipbuilding.

7 GEORGE V, A. 1917

There is an iron worker's shed, equipped for handling all classes of iron work, 500 feet by 150 feet, engine and boiler shop 370 feet by 155 feet, and a joiner shop and mould loft 150 feet by 100 feet, besides a number of auxiliary work shops for building and repairing ships.

The total capital invested in the plant amounts to \$7,000,000.

In May last the new Government icebreaker *J. D. Hazen* was launched, length B.P. 275 feet, breadth 57.6, depth 32 feet, tonnage displacement 5,000. Cost \$998,583 (this vessel has since been sold to the Russian Government), and in August, there will be completed a Government elevator dredge, length 284 feet B.P., breadth 48 feet, depth 20 6 inches, dredging capacity 1,500 tons per hour, dredging depth 57 feet. Cost \$883,700.

Besides this new construction, 24 vessels were docked and repaired in the *Duke of Connaught* dock and 32 in other basins in the harbour.

KINGSTON SHIPBUILDING COMPANY, KINGSTON, ONT.

This shipbuilding and repairing plant was established at a cost of \$92,000 and is used in connection with the Government dry dock at Kingston, of which they are the lessees.

During last year no new construction work was carried on, the operations being confined to repair work.

The present plant is equipped for the construction of steel hulls, but not for the building of boilers and engines.

POLSON IRON WORKS, LIMITED, TORONTO, ONT.

The Polson Iron Works, Ltd., have facilities and plant for building the largest sized steamers, as instanced in the *Ontario No. 2* with a gross tonnage of 5,568 tons, but outside of the Lake Ontario service are restricted to canal size steamers.

The valuation of the property and plant is approximately \$2,000,000, and included in the plant are machine and boiler shops.

During the twelve months ending March 31, 1916, the firm completed the following contracts:—

C.G.S. *Grenville*, for Dominion Government, gross tonnage 497.32, length B.P. 155 feet, breadth 30 feet, depth 13 feet.

Hydraulic Dredge *Tornado*, for Canadian Stewart Co., gross tonnage 1,120.

SS. *Ontario No. 2*, car ferry and passenger steamer for Ontario Car Ferry, Ltd., Montreal, gross tonnage 5,568.

MONTREAL HARBOUR COMMISSION.

The Harbour Commissioners of Montreal who control and carry out harbour improvements and expenditure and revenue are the same as last year, W. G. Ross, Esq., President, Farquhar Robertson, Esq., and Brig-Gen. E. Labelle, Secretary Treasurer, Major David Seath and Chief Engineer, F. W. Cowie, M. Inst. C.E.

SESSIONAL PAPER No. 21

The trade conditions in Montreal harbour were in many ways similar to the experience of 1914 owing to the war in Europe. The steamers known as regular liners before the outbreak of the war, were employed as transports, and other ships, in many instances, replaced the liners. It was difficult to procure tramp vessels for carrying grain and other agricultural products.

The harbour was open for navigation on the 11th of April, 1915, when the *Longueil* arrived at her pier from her winter quarters. The first transatlantic steamer to arrive was the *Cascapedia*; Captain Jones her commander received a token of the event in accordance with the custom of previous years. The last vessel bound overseas to leave was the *Port Dalhousie*. Her departure occurred on the 11th of December and later than any sea-going vessel was known to depart.

The effect of requisitioning sea-going vessels by the Admiralty for transportation purposes was more marked in 1915 than in 1914. During the season of 1914, the sea-going vessels that arrived in the port of Montreal numbered 916, with a tonnage of 2,755,518; in the season of 1915, the number was 815, and the tonnage 2,261,374.

Notwithstanding the willingness of shipowners to accommodate shippers by carrying cargo to the full capacity of the different ships, the scarcity of tonnage very materially interfered with the trade of the port. Large quantities of grain and other products of the kind, usually shipped from Montreal, were not shipped to overseas countries from the port, because a sufficient number of vessels was not available.

The quantity of grain handled in the elevators was 37,064,002 bushels, about 25,000,000 less than in 1914. The facilities for receiving commodities and shipping were greater owing to improvements of the harbour and equipment.

The Head Line Company began a new service between Montreal in the year 1915, by establishing a line in the transatlantic carrying trade to Avonmouth, G.B. The special trade mainly consisted in carrying provisions and cheese for which suitable equipment had been provided.

Shipping of nitrate of soda from Chili, by way of Montreal to United States western ports, was also, a new feature in the trade of the port. One transshipment only was necessary in a circuit of 10,500 miles.

Considering the changed conditions, due to the war in Europe, the entire business of the port was far from discouraging. The arrival of sea-going vessels in the St. Lawrence from British and other ports, can, in a large measure, be attributed to the protection of the British navy.

Of the total net tonnage of vessels of all classes arriving in the port of Montreal, during the season of navigation, the tonnage of the transatlantic vessels was 1,657,728; from the Maritime Provinces and other seaports, 603,546 tons, and from Inland ports 4,222,426, total 6,483,700.

Insurance rates have for many years been a matter of concern to shipowners making Montreal the transatlantic port on this side of the ocean. The Minister of Marine and Fisheries, for the time being, and the harbour commissioners have repeatedly made representations to underwriters in Great Britain with a view to having the rates on hulls and cargoes charged vessels

7 GEORGE V, A. 1917

using the St. Lawrence route reduced to approximate the rates prevailing in voyages to more southerly ports.

Tramp steamers are more especially at a disadvantage when taking the North Atlantic route. For some reason for which no definite explanation has been given by underwriters, discriminating rates have been charged upon cargoes and hulls to Canadian ports. The harbour commissioners have pointed this out again in preparing their report and have resolved to make further representations to the underwriters in Great Britain. All really dangerous factors of former years have been gradually removed from the St. Lawrence route. The sheltered nature of the route and the unsurpassed character and complete system of aids to navigation have been frequently and explicitly pointed out, but without the desired effect. The large expenditure of about 70,000,000 dollars for improvements along the route of the gulf and river St. Lawrence and the terminals has made this waterway one of great security in navigation. The harbour of Montreal is equipped with all essential facilities for handling freight and has in this respect no equal on this continent. The piers, sheds, grain conveyers for simultaneous loading of a number of ships from the grain elevators, and the elevators themselves, are unique in their perfection.

The ship channel of the St. Lawrence-river for 220 miles below Montreal has been continuously undergoing improvement; lighthouses, lighted buoys, semaphores, wireless telegraph, signal stations, pilotage arrangements have been established and are maintained at great cost. A large floating dock capable of receiving large transatlantic liners, with workshops is conveniently located at Montreal; another, 160 miles downstream at Quebec is under construction and at this point also is a capacious wet dock for repairs.

Among the important precautions arising from the changed conditions after outbreak of the war, was the organization of an effective harbour police force. The force rendered good service in 1914 and a more perfect system was put in operation in 1915.

The railway traffic department shows in its statement, a large increase in the number of cars employed in conveying freight, compared with any previous year since the establishment of the system. In 1907, the number of cars used was 70,850 and in 1915, 157,480. This increase in the handling was brought about by the addition of new cars and the employment of the line in conveying soldiers being mobilized, from one railway company line to another and to steamers. The compression of hay in three of the sheds during the winter months contributed to the traffic, the increase in the conveyance of chilled meat and other perishable products was a new factor, and the facilities for this kind of traffic were highly spoken of by shippers and steamship owners and agents. No delays occurred in the passenger or freight conveyance.

The traffic railroad has now in use 45 miles of track, an increase over last year of several miles. Local trade, it is expected will increase the traffic between the railway terminals and the delivery of freight at the steamships.

Still further extension of the tracks is contemplated keeping in view accommodation for manufacturing plants now on the harbour front and others that in future seem more than probable.

SESSIONAL PAPER No. 21

Extensive alterations to locomotives and cars were carried out in the shops of the railway traffic department and a building was erected for the office of this department and residence of the yardmaster. The use of electricity in place of steam for motive power has been the subject of much thought and the conclusion has been formed that electricity has great advantages over steam in many respects. The smoke nuisance would be abolished, the absence of acid effects on steel and galvanized plant, instant application of power in the working of railway and perhaps economy are among the advantages claimed for electricity. An expert has been employed to enter into all details of the subject and report.

Construction of warehouses at convenient points on the harbour property is a subject that has also received attention recently. High level tracks and roadways now enable the handling of freight in winter as well as summer along the harbour front. Goods, therefore, can be stored for future delivery to all points and enable importers to take advantage of the cheaper rates of freight which are generally charged in midsummer.

The main object of building such a warehouse is to supply a want frequently pointed out by importers who have complained of the deficiency. Plans have been prepared for building an eight story warehouse in a central place on the harbour front with railway spurs and other connections.

A board of commissioners composed of Mr. Eugene Haskell, W. J. Stewart and Fredk. Wm. Cowie was appointed to make an examination and report upon the effect of certain dredging in the harbour on depth of water and currents.

The engineering department under control of Mr. F. W. Cowie, Chief Engineer, has carried out the work of improving the harbour and usual maintenance and upkeep of the working plant and work previously constructed.

The following outline shows the progress in certain improvements during the year.

The improvement and extension of the harbour railway tracks.

The continuance of the construction of the new Victoria pier and Market basin.

The continuation of work on the bulkhead high level wharves on the river front eastward of Victoria pier.

General dredging of, widening and deepening of basins and berths.

Dredging of channels for relieving St. Mary current.

Paving and laying railway tracks on wharves.

Completion of work near floating dock basin and site for Canadian Vickers shipyard and repair works.

Progress made in harbour facilities in connection with hoists, flood gates, bridges, subways and freight yards.

Additions made to harbour commissioners construction plant.

The rebuilding in concrete of the quay wall opposite shed No. 13.

The construction of a second industrial wharf at Pointe aux Trembles.

The construction of the Longueuil-St. Lambert highway.

The commencement of the construction of the west extension to grain elevator No. 1.

The diversion of the Elgin basin sewer outlet and the mooring of the wharf office building.

7 GEORGE V, A. 1917

The operating of the floating derrick, hoists and other appliances.

The elevators have been enlarged from year to year since 1910 and the work on the west extension of No. 1 it is expected will be completed by the opening of navigation in 1916. The capacity for storage of elevator No. 1 will be 4,000,000 bushels; of No. 2, 2,622,000 and of the Grand Trunk elevator, 2,150,000 bushels; total capacity, 8,772,000 bushels.

The elevators are constructed of re-inforced concrete on the most modern plan and with modern equipment. In order to prevent congestion as far as possible in unloading vessels, special attention has been given to building marine towers. Two of these are connected with the west extension now under construction, having a capacity of 20,000 bushels each per hour, making an addition to the towers and legs already attached to the elevators. Twelve elevator legs of 15,000 bushels capacity each per hour form part of the equipment of No. 1 elevator, each leg tributary to two garnerers.

The traffic railway along the harbour front is now 7 miles in length. The total miles of tracks, including spurs, sidings and yard track is 44, of which 5.5 miles were constructed in 1915.

The accommodation for the river and ferry steamers was largely increased by dredging and construction of quay.

Several river steamer berths were added to the number in use.

The site of the dry dock, consisting of 30 acres in area, was increased by an addition of 6 acres of right of way and road tracks. Protection work on the outer slopes was carried out to a total length of 3,000 feet of rip-rap.

During 1915 great activity prevailed in docking and repairing vessels, showing the importance of the dry dock. About 25 vessels were docked, examined, cleaned and repaired, from opening to closing of navigation in 1915.

Reconstruction of Jacques Cartier pier and Laurier pier opposite Maisonneuve formed part of the necessary engineering work; the material used in rebuilding consisted of cribwork and concrete.

During the year the new tug *David Seath* was added to the harbour fleet, a scow machinery for new derrick was added to the harbour construction plant.

The statement of receipts and disbursements for the year on Revenue account show an expenditure of \$1,436,533.85 and receipts of \$1,348,241.65.

The expenditure on Capital account was \$1,850,001.40, advances from Dominion Government and balances from 1914 \$1,955,081.69, receipts on Capital account \$1,955,081.69.

QUEBEC HARBOUR COMMISSION.

Work was carried on in constructing new dock frontage on the north face of the Louise Embankment, which, when completed, will accommodate vessels drawing 35 feet of water, fireproof landing sheds, grain loading galleries, electric wharf cranes, and other modern appliances will be installed on this frontage which will be thoroughly up-to-date and complete in every respect.

On the river St. Charles front six foundation blocks for the bulkhead wall were sunk and filled ready for superstructure—total length 1,162 feet. Total length of substructure of this wall now completed is 2,843 feet, of superstructure

SESSIONAL PAPER No. 21

2,387 feet. Some 969,728 cubic yards of dredging filling have been deposited between the old and the new north walls of the Louise embankment, bringing this portion up to the general level.

At Indian cove substructure blocks for the bulkhead wall have been completed for a length of 1,010 feet.

A set of ways has been laid down on the beach to the west of Long wharf to facilitate painting and repairing of Commissioner's dump and deck scows, and a pipe line connected with the mill pump for fire protection. From the Victoria cove quarry 63,000 cubic yards of stone were taken during the season for bulkhead walls.

Electric lights have been installed on the floating grain elevator, and an elevator to handle salvage grain in connection with the drier house.

Twenty "Western" dump cars and one spreader have been added to the commissioners' plant.

A railway line has been built along the west dock front from the cross-wall to the marine tower of elevator No. 2, and 4 railway lines serving the Q.H.C. elevator No. 2 have been connected with the embankment railway system.

The total expenditure amounted to \$263,514.76 and the receipts on Revenue account to \$251,872.77, leaving a deficit in the year's operations of \$11,641.99.

On June 8 the Duke of Connaught visited the docks and on July 19 the Lieutenant-Governor of Quebec made a tour of the harbour and paid a visit to the harbour commissioners' offices.

The first vessel to leave harbour was the C.G.S. *Druid* on March 23rd to place buoys below Quebec, and the last on the 16th December, the ss. *Lady of Gaspé*, bound for Halifax.

The harbour and river were open for general navigation by the middle of April.

TORONTO HARBOUR COMMISSION.

Toronto harbour, York county, Ontario, is situated on the north side of lake Ontario, about thirty miles from its western end.

The harbour is formed by a low sandy island on the south side. The ten foot contour from the centre of the island is about a half mile distant from the beach. A twenty foot contour is about $\frac{1}{10}$ of a mile. The water increases in depth from forty to fifty feet about one and a half miles in the lake opposite the centre of the island. On the western side of the island and part of the lake shore is Humber bay; on the eastern side of the island and on the lake shore is Scarboro beach.

There are two entrances to the harbour, the one called the Eastern channel and the other the Western channel. The Eastern channel is between two parallel piers constructed of concrete. The approach to this channel has been dredged to sixteen feet in depth with a splayed width of about 1,000 feet. The distance between the piers is 375 feet and the depth 16 feet at 245 feet above New York sea level. The eastern pier of this channel has a boat landing near the centre.

7 GEORGE V, A. 1917

The new Western channel, also between concrete piers, is 400 feet between the piers and the depth of water is about 17 feet. The piers of this channel are, one on the south side 2,535 feet long and one on the north side 2,235 feet long.

There is also the old Western channel, north of the new channel, close to the city front and mariners are warned not to use this entrance before consulting the harbour master of this port.

The shore of the harbour is curved along the south of island side and straight on the northern or city front. The area of the harbour is six and a quarter square miles and the depths vary from 14 to 25 feet.

A channel has been dredged to the wharves at Hanlan's point for ferry boats, and small passenger boats ply between the city and the following: Ward's island, Centre island, Sick Children's hospital and Hanlan's point. A channel has been dredged 1,750 feet in length by 100 feet in width with a depth of water at the present time of 9 feet, and approaching the wharves at Hanlan's point the width is 250 feet for a distance of 500 feet. This channel is used by steamers plying between the city wharves and Hanlan's point.

The wharves at present used by shipping are located on the city side of the harbour. The face frontage of the wharves measures about one mile and the wharves are separated by slips of various widths. At the inner end of these wharves are 25 railway tracks with sidings leading to the various coal and warehouse wharves. The depth of water at the wharves varies from 14 to 22 feet. There is berthing room at some of the wharves for vessels from 300 to 400 feet in length. There are four wharves where coal for Toronto is discharged and stored in large sheds, but the principal coal for Toronto is supplied by rail.

The storehouses on the wharves of Toronto at the present time are the Canada Steamship Co. storehouse with a capacity of 4,000 tons; the two sheds of the Harbour Commissioners, Harbour Square dock, with a capacity of 4,500 tons each; the three sheds on the Harbour Commissioners dock with a capacity of 3,000 tons and the Canada Steamship shed with a capacity of 2,000 tons. There are cold stores having a capacity of about 500,000 cubic feet.

The quantity of coal imported into Toronto harbour by vessel is as follows:

Anthracite.....	109,072 tons.
Bituminous coal and screenings.....	37,468 "

The quantity of coal imported into Toronto by rail and vessel is as follows:

Anthracite.....	842,111 tons.
Bituminous coal and screenings.....	974,984 "

1,817,095

The number of vessels arriving at this port for the year was 2,508.

Total tonnage entering this port for the year was 2,682,893.

Total number of vessels wintering at Toronto Harbour including Tugs, Propellers, Ferries and Passenger Steamers was 108.

LIGHTS: The lights and fog alarms under control of the Department of Marine and Fisheries on Toronto island on the lake shore are as follows:

SESSIONAL PAPER No. 21

One on Gibraltar point, S.E. side of Point $1\frac{3}{4}$ miles south of Toronto, latitude N. 43-37-0, longitude W. 79-22-55, white revolving.

One at east entrance, outer tower, 100 feet from outer end of east pier, latitude N. 43-37-48, longitude W. 79-20-20, red occulting. Inner tower on inner end of east pier 2,400 feet and 320 degrees from outer light.

Diaphone fog alarm on beach just east of pier, 1,630 feet inside of outer light. Fog bell on platform on north side of inner lighthouse.

Lights on western entrance are:—One on south pier near its outer end, latitude N. 43-37-46, longitude W. 79-23-50 red fixed. One on south pier near its inner end, 2,423 feet, 55 degrees, 30, from front. Fog bell on roof of front lighthouse.

Steamboats of the different lines are piloted by the officers on board each steamer.

The total tonnage entered and departed during the fiscal year 1915, was 2,682,893 tons.

The Harbour Commissioners operate a public dock at the foot of Yonge street at which vessels may dock, the only charge being for the handling of freight through the freight sheds on the dock.

All vessels entering the harbour are subject to harbour dues on goods landed. These dues are very light, the schedule being as follows.—

Merchandise, etc., Government Stores and all

unenumerated articles as per bill of lading 3 cents per ton of 2,000 lbs.

Coal.....	3	“	“	
Wood.....	3	“	“	cord.
Stone.....	5	“	“	toise.
Unwrought building stone.....	1	“	“	ton.
Ice.....	1	“	“	“
Moulding sand.....	1	“	“	“
Fruit and vegetables, baskets, 15 lbs. and under $\frac{1}{16}$		“	“	each.
Fruit and vegetables, baskets up to 30 lbs.....	$\frac{1}{8}$	“	“	
Fruit, crates and boxes over 30 lbs. and up to 55 lbs.....	$\frac{1}{4}$	“	“	
Fruit and vegetables over 55 lbs.....	$\frac{1}{2}$	“	“	
Fruit, bags all sizes.....	$\frac{1}{2}$	“	“	
Fruit, barrels, all sizes.....	$\frac{1}{2}$	“	“	
Fire and scoria brick.....	5	“	“	per 1,000.
Common brick.....	3	“	“	
Shingles in bundles.....	1	“	“	
Laths and hoops.....	1	“	“	
Lumber, sawed or square.....	3	“	“	ft. b.m.
All grain and pulse.....	5	“	“	1,000 bu.
Sheep, pigs or calves.....	2	“	“	each, in carcass.
“ “ “.....	1	“	“	“ alive.
Carriages, carts, or sleighs, horses and horned cattle.....	10	“	“	each.

LEGISLATION.

New legislation has been enacted as follows:—

An Act to amend the Canada Shipping Act.

Section four hundred and forty-two, four hundred and forty-three and four hundred and forty-four of the Canada Shipping Act, Revised Statutes of Canada, 1906, chapter one hundred and thirteen, with the heading immediately preceding section four hundred and forty-two, are repealed and the following sections and heading are substituted therefor:—

“442. The number of pilots for the pilotage district of Quebec shall not exceed one hundred and twenty-five.

“443. Whenever the period of apprenticeship of any apprentice under the Quebec Pilotage Authority has been interrupted by sickness, involuntary absence, or other legitimate cause, such apprentice subject to such regulations as may be made by the Pilotage Authority may be allowed to serve an additional period equal to the time lost by such interruption, and if found otherwise qualified and entitled to a license as a pilot he may be granted such license after he has completed a full period of service of seven years including the said additional period.”

Section six hundred and twenty-nine is amended by adding the following sub-section thereto:—

“2. Subject to such regulations as may be made by the Minister, this section shall not apply to any passenger ship not exceeding sixty-five feet registered length propelled by an internal combustion engine or by a steam engine with a flash boiler, or by electricity.”

The following section is inserted immediately after section six hundred and forty:—

“640A. The Minister may issue certificates authorizing persons found qualified by the Chairman of the Board of Steamboat Inspection to take charge of the machinery of vessels propelled by internal combustion engines or by steam engines with flash boilers or by electricity, and may prescribe by regulations a classification for such certificates, the qualifications necessary for obtaining the several classes respectively, the limits of the authority and power conferred by the several classes of certificates, and the fees payable for such certificates, and may also provide for the examination of those desiring to obtain certificates.”

“2. The provisions of section six hundred and twenty-eight should apply to the certificates granted under this section.”

SESSIONAL PAPER No. 21

An Act to Amend the Canada Shipping Act.

Section three of Chapter sixty-five of the Act of 1908 is repealed, and the following is substituted therefor:—

“(f) ‘Coasting Voyage’ means a voyage between any port or place in Canada and any other port or place in Canada or in Newfoundland, Labrador, or St. Pierre or Miquelon, or any port or place in the United States of America or Mexico or Central America or in the West Indies, or on the eastern coast of South America not further south than forty degrees south latitude; or on the coast of the territory of Alaska or of the western coast of South America not further south than forty degrees south latitude.”

An Act to amend the Vancouver Harbour Commissioners' Act.

Paragraph (t) of section nineteen of the Vancouver Harbour Commissioners' Act, chapter fifty-four of the Statutes of 1913, is repealed and the following is substituted therefor:—

“(t) The imposition of tolls, rates, fees and dues on vessels entering or lying within the harbour, other than pilotage dues, sick mariners' dues, and steamboat inspection fees.”

NEW LIGHTKEEPERS AND HARBOUR MASTERS APPOINTED.

Name of Station.	Lightkeeper.	Salary.	
		Minimum.	Maximum.
Price Monument (Back) P.Q.	Albert Tremblay.	\$ 140	\$ 180
Price Monument (Front) P.Q.	Neree Tremblay.	140	180
St. Johns river (Front) P.Q.	Wm. Roussy.	80	100
St. Johns River (Back) P.Q.	Louis Dorobie.	80	100
Ile Crosbois range P.Q.	Albert Trudeau.	120	140
Thunder river range P.Q.	E. J. Duguay.	140	180
Grand Bergerone river P.Q.	Emile Tremblay.	140	180
L'Orignal, Ont. (Montreal Agency)	S. Seguin.	180	220
Ile au Milieu range, P.Q.	Jos. Chaput.	220	260
Matane range, P.Q.	Pierre Savard, Sr.	120	140
Dixie Range (Back) P.Q.	Ed. Massie.	320	380
Dixie Range (Front) P.Q.	Albert LeBlanc.	320	380
Ile au Marteau, P.Q.	Chas. Boudreault.	380	440
Contrecoeur range (Back).	Jos. Gosselin.	120	140
Contrecoeur (Front)	Gervais Eucher.	120	140
Cap au Corbeau range, P.Q.	Chas. E. Tremblay.	320	380
Port Morien, N.S.	Wm. A. Brunn.	60	80
Salvages, N.S.	Jesse C. Obed.	980	1,180
Kaulbach isd. range, N.S.	Jas. W. Heisler.	220	260
Minasville, N.S.	Lawson E. McCulloch.	60	80
White Point, N.S.	Michael Dixon.	60	80
Digby Gut, N.S. (East Side)	John McGrath.	180	220
Sandford, N.S.	Henry W. Burgoyne.	60	80
Gull Rock, N.S.	Wm. E. Boutilier.	180	220
Cape St. Mary breakwater, N.S.	Mande A. Doucette.—	60	80
Maisonnette, N.B.	Philias Gauvin.	320	380
Chance Harbour, N.B.	Nat. C. Beilding.	260	320
Hardwicke, N.B.	Chas. S. Bremner.	60	80
Grandoon Flats, N.B.	Donald A. Ross.	320	880
Clifton, N.B.	Wm. T. Sheldrick.	60	30

NEW LIGHTKEEPERS AND HARBOUR MASTERS APPPOINTED.
—Concluded.

Name of Station.	Lightkeeper.	Salary.	
Alma, N.B.	John Fletcher	60	80
Bathurst harbour, N.B.	Contract light		
Durham wharf, N.B. . .	Alex. Daigle	100	120
Hilton wharf, Ont.	Peter J. Brown	60	80
Toronto Eastern Gap back range, Ont.	Contract light		
Livingstone channel, upper entrance	Alex. K. Duff	260	320
Nottawasaga river range, Ont	Oscar A. Burnside	\$50 per annum.	
Winnipegosis, Man	Thos. Toye	320	380
Comox Bar range, B.C. . .	Contract light		
Carr point, B.C.	Jno. E. Sugars	\$10 per month.	

Harbour Proclaimed.	Harbour Master.	Salary.
Dipper harbour, N.B. . .	Addeson G. Thompson	\$200 per annum of fees collected.

EXPENDITURE AND REVENUE.

The Parliamentary appropriation for the fiscal year 1915-16 was \$6,797,835.98, the total expenditure \$5,621,610.88, leaving an unexpended balance of \$1,176,225.10. The net revenue was \$461,456.83.

CORRESPONDENCE.

The total number of letters received during the fiscal year 1915-16 was 50,694 as against 51,832 in 1914-15 and 39,792 letters were sent as against 36,592 in 1914-15.

SEASON OF NAVIGATION.

The river St. Lawrence was clear of ice at the port of Montreal and buoys laid down for navigation to the sea on the 15th of April, ten days earlier than last season, and on the 20th of April the schooners *Honourable Hector Langerin* and *Grace Darling* put out to sea. On December 11th the steamship *Port Dalhousie* passed through Montreal harbour for Pictou, N.S., being the last outward bound vessel to leave the port. The fall was remarkably fine and open.

At the port of Quebec the harbour and river were open for general navigation by the middle of April and remained open until the 16th of December.

SESSIONAL PAPER No. 21

STEAMBOAT INSPECTION.

The report of the Chairman of the Board of Steamboat Inspection, in full detail, is published as a supplement to the Annual Report.

A. JOHNSTON,
Deputy Minister of Marine and Fisheries.

APPENDIX No. 1.

ANNUAL REPORT OF THE CHIEF ENGINEER OF THE
DEPARTMENT OF MARINE.

The Deputy Minister of Marine and Fisheries,
Ottawa.

SIR,—I have the honour to submit the following report of the work done in the several services under the supervision of this office during the twelve months ended March 31, 1916.

There have been no changes in the duties pertaining to this branch during the past year; they remain as enumerated in previous reports.

STAFF.

The following changes have been made in my office staff during the fiscal year: Miss Edith Mason was temporarily employed as a typist from the 2nd June, 1915, to 25th February, 1916, when she was transferred to the Naval Service Department. Mr. T. L. O'Hara's term of temporary employment expired on 25th June, 1915. Mr. Robert G. Airey was appointed to a third-class clerkship on 25th June, 1915.

The following members of my staff have been granted leave of absence for the purpose of joining the overseas Canadian forces:—

Mr. F. E. Calderon, draughtsman, private in the machine gun section of the 2nd Battalion, from the 17th August, 1914.

Mr. John Henderson, assistant engineer, private in the 7th Brigade, C.F. Artillery from the 31st July, 1915.

Mr. Paul L. Kuhring, draughtsman, to take the officers' training course at Kingston, from the 20th March, 1916.

Mr. A. C. Andresen, draughtsman, to take the officers' training course at Kingston, from the 27th March, 1916.

I am pleased with the way in which the staff has worked throughout the year.

OFFICE WORK.

The largest part of the work done by the general staff of the branch consists in the construction, repair, and improvement of light-buildings, fog-alarms, beacons, and other aids to navigation, the supply of new or improved illuminating apparatus, etc., the payment of expenditures for these services being made out of the vote of \$750,000 for construction of aids to navigation. Full details of the work done in this connection during the past year are contained in a separate report in tabular form attached hereto, which gives a complete statement of all expenditure charged to the vote in question. (Inclosure A.)

In addition to the work of this branch done under the above vote, the staff has been called upon to perform work of varied description for other branches of the department, and which may be summed up as follows:—

For the Meteorological Service Branch—Erection of storm signal masts at the following places: Seatar, N.S., Port Hope, Ont., and repairs to observatory at St. John, N.B. and to the time-ball frame at the citadel, Quebec.

SESSIONAL PAPER No. 21

For the Naval Department.—Repairs to boathouse and construction of new slipway at Blanche, N.S.

Except in a few instances where lighthouse and fog alarm stations are located at very remote and outlying places, the titles to all properties owned by this department have been completed.

In addition to this work, the titles to the sites of all public wharves under the maintenance and control of this department, numbering about 1,000, are being investigated and copies of all deeds and other documents affecting the same are being procured for our title records, so that eventually it is hoped to obtain a complete record of all these public lands.

During the past year, 321 deeds and other title documents have been added to our records, and in the prosecution of this work, 120 plans of survey, etc., have been made in this office.

In the case of all new properties acquired, expropriation plans and descriptions have been prepared and recorded in the county registry offices, in addition to the usual notarial deeds, as an extra precaution.

This branch has also undertaken to make a complete record of the limits of all public harbours established in Canada, and these limits are plotted on plans which are constantly being added to and will eventually comprise a set covering the shore-line of the whole of the Dominion. This work is now under way, and considerable progress has been made during the past year.

The work in connection with applications for water lots has continued heavy, as will be seen by reference to the draughting-room statistics.

Progress has been made in the establishment of headlines in some of the principal public harbours, based on joint action by this department and the Department of Public Works. It is hoped that such establishments will tend to the improvement both in appearance and convenience of the water-fronts affected. During the past year headlines have been established by Order in Council in the following harbours: Victoria, B.C. (partial amendment to established headline); Ford, Ont.; Toronto, Ont. (partial amendment to established headline); Halifax, N.S.; Pictou, N.S.

The following table indicates the work done in the draughting office during the twelve months ended March 31, 1916.—

Description of Work.	Plans Designed.	Plans Received.	Copies Made.	Difference from Last year.
Lighthouse towers and dwellings.....	51	4	393	—245
Fog alarm buildings.....	6	1	0	— 76
Details.....	34	26	724	— 19
Wharves, piers, etc.....	8	64	33	—200
Outbuildings.....	20	8	126	+ 7
Machinery.....	39	25	144	— 8
Lanterns and illuminating apparatus.....	10	23	113	—219
Buoys and appurtenances.....	30	11	213	—278
Beacons.....	3	7	24	— 12
Steamers.....	4	10	9	— 1
Land surveys.....	131	117	515	—498
Plans relating to waterlot applications.....	9	242	84	—107
Miscellaneous.....	26	376	105	—1,061
	371	914	2,483	—2,717

7 GEORGE V. A. 1917

Total plans for 12 months from April 1, to March 31, 1916.....	3,708	-2,777
Charts received and recorded.....	505	+ 106
Charts received and entered in chart books.....	22	- 24
Photographs received and recorded.....	436	+ 236
Specifications and bills of material written.....	150	- 5
Notices to Mariners issued (comprising 483 subjects).....	135	- 23

PUBLICATIONS.

The work of preparing and issuing notices to mariners continues to be heavy and urgent. During the past twelve months, 135 notices, covering 483 subjects, have been published.

Amongst miscellaneous notices to mariners the following may be especially noted:—

A large number, required for the publication of warnings or regulations necessitated by the European war, including the following:—

Halifax, N.S.—Alterations in traffic regulations; prohibited anchorage; closing of channel westward of George island;

Canada (generally).—Reporting of suspicious craft;

England.—Restriction of navigation in the approach to Portland and caution respecting the target practice; restriction of navigation in the river Dee, also later, withdrawal of restrictions; prohibited anchorage in East Swale entrance; boom defence in the Tyne; and traffic regulations and signals; examination anchorages in Sunderland harbour and river Humber;

Scotland.—Passage through Scapa Flow prohibited; special instructions with regard to traffic in the Firth of Clyde; alteration of Clyde examination anchorage; general traffic regulation of the Clyde; Stornoway harbour closed at night;

Ireland.—Special regulations respecting Queenstown traffic;

British ports and shipping generally.—Caution when approaching; distinguishing flag of King's Harbour Master at dockyard ports; requirements for signalling and signalling-lamps for British ships;

France—Adriatic Sea.—Traffic regulations for the Pas de Calais, and amendment of same later; declaration of blockade of Austrian and Albanian ports;

Russia, Asia Minor.—Regulations respecting the White sea; blockade of coast declared.

Improvements of channels by dredging, principally done by the Department of Public Works, were described at North Arm, Fraser river, B.C.; Newcastle, Ont.; South Ingonish, N.S.; Port Darlington, Ont.; Shippigan Gully, N.B.; Doucet Landing, Que.; Pitt river mouth, B.C.; Bongard wharf, bay of Quinte, Ont.; Little Detroit, Ont.; Lorembec harbour, N.S.; mouth of Kaministiquia river, Ont.; Fraser river, B.C.; Goderich, Ont.; Little Current, Ont.; Rocky point ferry, Charlottetown, P.E.I.; Murray bay, Que.; Port Arthur, Ont.; Batiscan, Que.; Bruce Mines, Ont.; Richards Landing, Ont.; Whycocomagh, N.S.

Uncharted dangers were reported and described at Beware passage, B.C.; Elliot passage, B.C.; Drury inlet, B.C.; False Detour channel, Ont.; Key inlet, Ont.; Wells pass, B.C.; Middle bay, gulf of St. Lawrence, Que.; south of Great Mekattina island, Que.; Lockeport, N.S.; off Negro head, N.B.; off Cape Tatnam, Hudson bay; off Lyell island, Q.C.I., B.C.

Changes in buoyage, including the establishment of new buoys, in some cases involving the publication of a complete list of buoys, were recorded at

SESSIONAL PAPER No. 21

Toronto, Ont.; on wreck of *Christine* above St. Jean, Que., at foot of Ile aux Foins, Que.; Little Current, Ont. (3 notices); South Ingonish, N.S.; Shoal lake, Ont.; channels northwest of Grenadier island, and north of Howe island, Ont.; Thousand islands middle channel, Ont.; Chance harbour, N.B. Bathurst harbour entrance, N.B.; Rose bay, N.S.; Eskasoni, N.S.; Goderich, Ont.; Mabou, N.S.; light-draught channel north of Ile de Grace, Que.; Rocky point; Charlottetown, P.E.I.; Telegraph narrows, Ont.; Port Arthur, Ont.; Batiscan, Que.; Byng inlet, Ont.; Bruce Mines, Ont.; Ste. Ann, N.S.; Mary Ward ledges, Ont.; Port Arthur, Ont.; Restigouche river, Que.; Lockeport, N.S.; Shad bay, N.S.; Inhabitants bay, N.S.; Trenton, Ont.; Cassilis, N.B.; Maheux road examination anchorage, Que.; Pointe aux Anglais, Que.; St. Patrick channel, N.S..

Day beacons were described as erected at Shark spit, B.C.; North Arm, Fraser river, B.C.; Roberts island, Ont.; entrance channel to Petite Yamachiche river, Que.; Thousand islands middle channel, Ont.; Half-tide rock, Hecate passage, B.C.—Sister rocks and rock southward of Halkett island, Selkirk Water, B.C.; Dog rock, Sandy ledge and Simpson ledge, bay of Fundy, N.B.; Ste Emmelie, Que.; Gull island ledge, N.B.; Cyril rock, Texada island, B.C.; Clarke rock, B.C.; Hegan point and DeHorsey island, Skeena river, B.C.; Edgewood and Cariboo points, Columbia river, B.C.; Grandes Piles to La Tuque, St. Maurice river, Que.

The following wrecks were located and reported; *Christine* at St. Jean d'Orleans, Que.; derelicts in the north Atlantic, (two separate wrecks); Dall patch, B.C.

Hydrographic notes were published dealing with the following localities: Toronto, Ont.; Port Weller, Ont.; Masset harbour, B.C.; Nass bay, B.C.; Alice and Hastings arms, B.C.; Thousand islands middle channel, Ont.; Fraser river, B.C.; Milbank sound, B.C.; Beauport, Que.; light-draught channel north of Ile de Grace, Que.; Victoria time signal, B.C.

Mariners were cautioned against interference with the waterworks intake pipe at Port Arthur, Ont.; and against approach to the rifle ranges at Long Branch and Niagara, Ont.

Lights on the swing bridge of the C.P.R. over the Lachine canal, Que., and marking the Quebec bridge, Quebec, were described, and many miscellaneous items of maritime interest were included in the published notices.

During the past twelve months notices relating to waters outside of Canada were issued, covering eleven items relating to Newfoundland, three items relating to the Atlantic, fourteen to the inland, twenty-three to the Pacific waters of the United States, two items relating to the Panama canal, one item relating to Lower California, and two items relating to South America, as well as five notices relating to transatlantic, and one notice relating to transpacific subjects.

A new edition of the "List of Buoys, Beacons, and Day Marks" on the Pacific coast of the Dominion of Canada was prepared and published, thoroughly revised and corrected by the undersigned personally, to the first of June, 1915.

A first edition of a "List of Buoys, Beacons, and Day Marks" on the Ottawa river, prepared by the undersigned personally and corrected to the first of June, 1915, has been published.

The annual edition of the "List of Lights and Fog Signals" was prepared and published in three separate volumes, one for the Atlantic coast and the river St. Lawrence to the head of ocean navigation, one for the inland waters of Canada, and the third for the Pacific coast.

PERSONAL INSPECTION.

As in previous years both the chief engineer and the assistant chief engineer made frequent trips of inspection, especially of works under construction. The

7 GEORGE V, A. 1917

assistant chief engineer gave particular attention on his visits to improving the organization and running of the workshops and depots at the several agency headquarters, particularly Prescott, Quebec, St. John, and Halifax.

The chief engineer accompanied the Deputy Minister to British Columbia on a trip extending from 23rd April to 28th May, 1915. They made a general inspection of aids to navigation on the Pacific coast, going out by Grand Trunk Pacific railway and paying special attention to the departmental depots of Prince Rupert and Victoria. Several days were spent in Vancouver learning conditions affecting the important harbours and harbour-development schemes on the Fraser river and Burrard inlet. The return trip was by way of Arrow lakes to Nelson, thence to Spokane and by the Chicago, Milwaukee and St. Paul railway to Sault Ste. Marie, whence the steamer *Simcoe* conveyed them across Georgian bay to Midland, lights and channels being inspected en route.

From August 10 to 20 the chief engineer accompanied the Minister on an inspection of aids to navigation in the gulf of St. Lawrence. Unfortunately the weather was unusually rough, making it impossible to land at several stations.

The chief engineer is impressed with the necessity of a more frequent and more thorough inspection by departmental officials of all the coasts of the Dominion, to deal not only with existing aids to navigation, but also with applications for new aids, and to investigate conditions affecting the handling of ships in the several harbours.

LIGHTING OF HUDSON BAY ROUTE.

In pursuance of the policy inaugurated last year of establishing aids to navigation to assist the Department of Railways and Canals in communicating with Port Nelson, the C.G.S. *Minto* was despatched as early as possible after the opening of navigation in 1915 in Hudson bay and strait, to place in operation the unwatched gas lights erected in 1914.

The beacons in the strait were found in good condition, were overhauled and were all in operation by 23rd August.

A wooden tower to carry an Aga gas beacon was erected on Nelson shoal on the west coast of Hudson bay by the Department of Railways and Canals for this department, and the light was established on it on 5th August, 1915, by a departmental foreman.

The unwatched beacon at Tatnam, near Port Nelson, was inspected and recharged by 15th August.

A steel skeleton unlighted day beacon was supplied by the department for erection at Marsh point, near Port Nelson, to replace a wooden beacon originally erected by the Hudson's Bay Company, which had blown down. The Hudson's Bay Company has undertaken to erect the steel beacon, the department providing the materials, but the work has not yet been completed.

The total expenditure in connection with the maintenance, supply, and erection of aids to navigation in Hudson bay and strait during the last fiscal year was \$9,006.06.

DEPARTMENTAL DEPOTS.

At the Victoria, B.C., depot, the location and grade at Johnston street having been settled, the department was able to prepare plans for the improvement of the property. During the coming fiscal year, all necessary sheds and equipment will be supplied, and the depot will be fully used.

The St. John wharf has been completed and is now in use by the department. A buoy shed has been erected, a derrick installed, and the erection of additional buildings is contemplated during the coming season.

SESSIONAL PAPER No. 21

The work of improvements at the Dartmouth depot, referred to in last year's report, has been practically completed.

The Prescott depot has been operated as usual during the past fiscal year, but the work has been less extensive than formerly owing to the curtailing of construction. Good success has been reached in the manufacture of reflectors, and small light-house clocks, and the vapour burner in use in the service has been standardized and materially improved. Goods amounting to \$129,807 have been transferred out of the stores. The general up-keep of the Prescott depot is estimated at approximately \$60,000 per year, of which about two-thirds is covered by the earnings of the depot, the other third being considered a fair charge for the maintenance of a buoy and supply depot, a yard, and in fact a sub-agency of the department. During the past fiscal year the actual cost of operation was \$56,604, and the actual earnings slightly under \$30,000, making the net cost of up-keep about \$27,000, or about \$7,000 more than estimated. This is due to the comparatively small amount of work done owing to war conditions.

REMOVAL OF OBSTRUCTIONS.

During the past twelve months the following work has been done under the annual appropriation for the removal of wrecks and obstructions to navigation:—

Belliveau cove, N.S.	..	Wreck <i>Maria Pearson</i> removed under contract by F. J. Belliveau.	\$ 49 00
Chenal Ecarte, Ont.	..	The hulk of the <i>Maine</i> removed by day labour.	241 08
Sydney Mines, N.S.	..	The schooner <i>Jennie B. Hodgson</i> capsized and sank near Sydney Mines, N.S. The masts, which were an obstruction to navigation, were removed by J. Salter and Son.	
Summerside, P.E.I.	..	A number of waterlogged and submerged logs in the harbour were removed by C. G. S. <i>Brant</i> .	
St. Clair river, Ont.	..	The str. <i>Tampa</i> , wrecked in St. Clair river subsequently removed by the Reid Wrecking Co.	
Chenal Ecarte, Ont.	..	The barge <i>Belknap</i> owned by W. H. Biden, which was wrecked at Johnson's bend, Chenal Ecarte, near Wallaceburg, Ont., was removed by the owner.	
A number of small expenditures such as buoying wrecks, advertising and incidental expenses were incurred.			818 69
Total amount expended this year under this vote.			\$ 1,108 77

MAINTENANCE AND REPAIRS TO WHARVES.

Wharves owned by the Government are usually built by the Department of Public Works of Canada, and on completion come under this department for maintenance (see R.S.C. cap. 112 and amending Acts). We have had formally transferred to our control 388 public wharves, but there are probably twice that number, of the completion of which we have not been officially notified, and where wharfingers have not yet been appointed.

This branch attends to minor repairs. Large repairs are undertaken by the Department of Public Works. During the past year, \$8,241.21 has been expended in repairs to wharves. The following is a list by provinces of the amount expended:

	\$	cts.		\$	cts.
Nova Scotia		270 25	Montreal District	1,167	55
New Brunswick	3,506	37	Ontario		655 23
Prince Edward Island		156 95	Quebec	2,232	82
General acct.		249 14	British Columbia		2 90

ICE-BREAKING.

1. A three-year contract with the Canadian Towing and Wrecking Company, Limited, of Port Arthur, to keep the harbours at the head of lake Superior open for navigation until the 17th December in each year, and to open them in the spring, as soon as the canal at Sault Ste. Marie is open for navigation, is still in force, and under this contract the harbours of Port Arthur, Fort William, and West Fort William were opened in the spring of 1915 in good time. Last autumn the open season continued very late, but some ice was broken as early as the 1st December. It was not found necessary to extend the operations of the ice-breaking fleet later than the 17th December. No complaints were received in the department with regard to the ice-breaking operations during the past season.

2. The contract with S. Shipman, of Sault Ste. Marie, Ont., to keep free from ice the channel between Kensington point, on the north shore of St. Joseph channel, and a convenient landing on St. Joseph island or Campement d'Ours island, was renewed for another year, the work beginning in the autumn of 1915 and continuing until the ice had formed to sufficient thickness to permit teams of horses to cross in safety. The work also included the breaking of a channel in the spring before the ice became dangerous, and keeping the channel free until general navigation was resumed. The cost for the year is \$500.

3. The usual contribution of \$300 was made towards keeping open the St. Croix river in the vicinity of St. Stephen. The annual cost of this work is in the neighbourhood of \$1,000 and the department of late years has contributed \$300 a year towards this, the remainder being made up locally.

TELEGRAPH OR TELEPHONE CONNECTIONS WITH LIGHTSTATIONS.

The list of lightstations and other aids to navigation connected by telephone or telegraph with the commercial and government trunk systems, which was printed last year in very incomplete condition, has been revised and completed, and is now reproduced, as enclosure B, appended to this report.

The policy of the department has been to restrict telephonic connections to stations of prime importance, where shipping interests would be benefited by the prompt transmission of ships' movements, or where shipwreck attended by danger to life was to be apprehended, and where early notice of a disaster might bring aid more promptly.

In preparing the list it has been found that a great many lightstations not included in it are in close proximity to commercial telephone or telegraph stations, and it may be stated in general terms that there remain few portions of the coast line of Canada that are not within easy access to telegraph or telephone establishments, either of commercial companies or of the government system, the latter being chiefly restricted to districts that would not be commercially profitable.

Respectfully submitted,

WM. P. ANDERSON, M. INST. C.E.
Chief Engineer.

CHIEF ENGINEER'S OFFICE,
DEPARTMENT OF MARINE,
OTTAWA, April 1, 1916.

SESSIONAL PAPER No. 21

INCLOSURE ‘‘A’’.—Detailed report of the chief engineer of the Department of Marine on construction, establishment and improvement of lighthouses and other aids to navigation, up to March 31, 1916.

To the Deputy Minister,
Department of Marine,
Ottawa.

SIR,—I have the honour to submit detailed a report on work done in the construction and establishment of aids to navigation, for the twelve months ending March 31, 1916.

This statement is put in tabular form, and includes every item of expenditure incurred during the year against the vote of seven hundred and fifty thousand dollars for construction, etc., but no work done chargeable to other votes.

NOVA SCOTIA.

NEW AIDS TO NAVIGATION.

Lightstation	Nature of the work.	How performed.	Contractor or foreman.	Expenditure during fiscal year.
Cape St. Mary	Erection of mast light	Day labour..	M. Doucette... ..	\$ cts. 24 18
Digby Gut ...	Establishment of a mechanical fog bell.....	“ ..	M. J. Egan.....	1,799 96
Mushaboon.....	Erection of pole light with shed at base.....	“	J. L. Colter.....	618 03
Port Morien.....	Erection of pole light with shed at base ..	“ ...	E. J. Geizer.....	109 23
Sanford.....	Erection of pole light with shed at base ..	“ ...	A. B. Little.....	159 93
Sheet harbour...	Erection of wooden range light towers ..	Contract.....	A. Balcon, Halifax	1,792 00
Spry bay.....	Inspection, etc ..	“ ..	“ ..	303 75
	Land registration fee.....	“ ..	“ ..	1 20

CHANGES AND IMPROVEMENTS IN EXISTING AIDS.

Abbott harbour.	Outstanding accounts in connection with installation of anchor lantern last year.....	“ ..	“ ..	13 90
Aranmore C.G.S.	Wages and petty cash.....	“ ..	“ ..	690 80
Barrington light-ship.....	Repairs.....	Day labour...	“ ..	1,205 84
Blanche.....	Repairs to boathouse and construction of new slipway.....	“ ...	E. H. Swain.....	168 07
Boars head.....	Purchase of a stove ..	“ ..	“ ..	15 00
Bon Portage.....	Illuminating apparatus improved by the installation of a 4th order dioptric lens.....	Day labour...	T. H. Phillips.....	704 55
Brier Island ..	Outstanding accounts in connection with the improvement to apparatus last year.....	“ ..	“ ..	77 27
Bunker island..	Outstanding accounts in connection with the improvement to apparatus last year.....	“ ..	“ ..	13 75
Burnt coat.....	Payment of lantern purchased last year.....	“ ..	“ ..	545 00
Cape Fourchu..	Installation of boiler in fog alarm building.....	Day labour...	J. Shires.....	1,439 01
Cape Race.....	Expenses hauling ventilator to station.....	“ ..	“ ..	9 81
Cape Roseway..	Dismantling old fog alarm.....	Day labour...	T. H. Phillips.....	171 24
Caribou.....	Erection of a wooden combined lighthouse tower and dwelling	Contract.....	W. Talbot, Pictou, N.S.	2,650 00
	Inspection and incidental expenses.....	“ ..	“ ..	278 75

7 GEORGE V, A. 1917

NOVA SCOTIA—Continued.

Lightstation.	Nature of the work.	How performed.	Contractor or foreman.	Expenditure during fiscal year.
				\$ cts.
Cheticamp.....	Provision and installation of a long focus triple flash reflector	Day labour ..	Wm. Merson	36 04
Ciboux island....	Provision and installation of 30' long focus single flash reflector and 55mm. burner.....	"	F. J. Geizer.	1,075 85
Coffin island.....	Outstanding accounts incurred last year.....			2,161 99
Country harbour	Land registration fees.....			2 00
Crichton head...	Illuminating apparatus improved by the installation of 4th order dioptric lens.....	Day labour	E. R. Morrison...	544 32
Dartmouth .	Expenses in connection heating water supply, electric lighting and telephone systems, repairs to wharfs and workshops..	Day labour...	J. L. Colter.....	27,222 96
	Construction of pile wharf.....	Contract.....	Standard Construction Co., Ltd., Halifax..	
Flat point.....	Protection work to prevent erosion of shore.....	Day labour.....	A. Clark	3,223 76
Guysboro' h'b'r.	Repairs to beacon.....	"		54 70
Guion island.....	Repairs to lightstation.....	"	H. McKinnon	1,147 30
Kaulbach island.	Purchase of sites.....			85 00
Liscomb.....	Illuminating apparatus improved by the installation of a 4th order single flash dioptric lens 35 mm. burner.....	Day labour.	T. H. Phillips	2,989 15
Little Hope.....	Repairs to lighthouse.....	"	J. L. Colter....	393 56
Little Narrows.	Expenses <i>re</i> site.....			51 59
Louisburg.....	Installation of a 4th order dioptric lens and 35 mm. burner.	Day labour...	T. H. Phillips	1,227 63
Mainadieu.....	Repairs.....	"	E. J. Geizer.....	507 12
Margaretville...	Provision and installation of 4th order dioptric lens.....	"	T. H. Phillips.. . . .	520 97
Margaree.....	Land registration fees.....			1 00
Minasville.....	Pole light moved to new location			253 83
Negro island.....	Erection of reinforced concrete tower, wooden dwelling combined boathouse and oil store	Contract .	D. C. Mulhall	11,200 00
	Provision of apparatus, installation, inspection and incidental expenses.....			3,026 15
Partridge island.	Expenses in connection with site.			108 85
Peggy point.....	Construction of 30-foot concrete tower.....	Contract	Standard Construction Co., Halifax.....	2,457 00
	Provision and erection of 8-foot lantern and 4th order dioptric lens, inspection, etc.....			1,954 92
Petitdegrat..	Construction of combined boat-slip and breakwater.....	Day labour	Wm. David.....	545 55
Point Aconi.....	Provision and erection of 4th order dioptric lens.....	"	E. R. Morrison	615 40
Port Felix.....	Land registration fees.....			2 00
Salvages.....	Completion of erection of fog alarm building, etc., etc.....			226 78
Sambro.....	Expenses in connection with purchase of site, etc.....			78 05
Scatari.....	Steam plant replaced by an oil engine plant.....	Day labour.	T. H. Phillips.....	8,523 79
	Completion of installation of new apparatus and lantern....		E. J. Geizer.....	
St. Paul island.	Completion of the erection of lighthouse and double dwelling for Superintendent and staff...	Day labour ..	E. R. Morrison.....	5,154 58
Sydney bar.....	Construction of protection work	"	D. McGillivray... . .	603 49
Tennycapc	Erection of pole light with shed at base.....	"	E. J. Geizer.....	301 92
Walton harbour	Provision and installation of 4th order dioptric lens.....	"	T. H. Phillips.....	533 27

SESSIONAL PAPER No. 21

NOVA SCOTIA—*Concluded.*

Lightstation.	Nature of the work.	How performed.	Contractor or foreman.	Expenditure during fiscal year.
				\$ cts.
Wedge island...	Provision and installation of 30" long focus reflector and 55 mm. burner.	Day labour.	T. H. Phillips....	999 51
Miscellaneous expenses	Materials in connection with the establishment of buoys, beacons, etc.			10,959 43
	Travelling expenses of officials, telegrams, salaries of foremen, etc.			8,797 01
	Total expenditure for Nova Scotia			110,155 32

NEW BRUNSWICK.

NEW AIDS TO NAVIGATION.

Alma.....	Erection of pole light.....	Day labour..	G. N. Breen.....	163 05
Deer island.....	Erection of two spindles.....	"	G. N. Breen.....	229 03
Dipper harbour.	Erection of pole light on wharf.	"	D. H. Mawhinney.	80 45
Dog rock.....	Erection of spindle.....	"	J. Ganong.....	40 00
Durham wharf.	Construction of wharf light.....	Contract...	J. & A. Culligan...	175 00
	Provision of apparatus, etc.....			149 51
Grandoon flats channel. .	Erection of range light towers front, a combined dwelling and lighthouse, back, a steel skeleton tower.....	Contract. . . .	A. Fitzgerald, Newcastle	2,768 28
	Inspection, provision, and erection of apparatus, etc.....			1,631 18
Gull rock.....	Erection of wooden cribwork day beacon.....	Contract. . .	C. A. Huntley, Parrsboro.....	1,940 00
Hardwick.....	Erection of pole light with shed at base.....	Day labour..	C. Bremner....	169 42
Herring cove...	Erection of pole light with shed at base.....	"	G. N. Breen.	188 45
Hopewell cape...	Construction of small wooden lighthouse.....	"	J. J. Christopher.....	177 56
Marcelle point..	Establishment of a fishing light.	Contract....	F. T. B. Young (contract price \$450.).....	729 58
Point Wolf.....	Erection of pole light with shed at base.....	"	G. N. Breen.	168 89

CHANGES AND IMPROVEMENTS IN EXISTING AIDS.

Bathurst.....	Outstanding accounts in connection with moving of front range light last year.....			65 98
Big Duck island.	Steam plant converted into oil and installation of Class "B" diaphone plant.....	Day labour...	F. J. Lewis	2,468 73
Cape Spencer...	Construction of fog alarm building and oil shed.....	"	G. N. Breen	5,052 65
Cassie point....	Completion of installation of long focus flashing reflector....			230 05
Chance harbour.	Completion of the erection of 18-foot wooden lighthouse tower. Work started last year.	Day labour...	D. H. Mawhinney	1,184 48
Cox point.....	Expenses re search and deed of land			9 50
Dalhousie.....	Land registration fee.....			2 00
Drews head.....	Provision and installation of 4th order dioptric lens and 25 mm. burner.....	Day labour...		951 80
Escuminac.....	Extending protection wall.....	"	K. R. McLellan..	177 71

7 GEORGE V, A. 1917

NEW BRUNSWICK—*Concluded.*

Lightstation.	Nature of the work.	How performed.	Contractor or foreman.	Expenditure during fiscal year.
				\$ cts.
Gannet rock	Completion of general repairs			105 79
Goose lake.....	Provision and installation of 4th order lens	Day labour	D. J. Gallagher	783 97
Head harbour..	Completion of the erection of fog alarm building, etc.			1,119 99
Hendry point...	Expenses research and deed of land			9 70
Heron island...	Provision and installation of winch and rope			29 70
Little Belledune.	Repairs to tower, and construction of groynes to protect light-house	Day labour	J. Gulligan	2,055 96
Long Eddy point	Changing diaphone			15 40
Machias Seal island	Completion of extensive alterations and improvements			1,715 83
Marine depot St. John	Completion of pile and concrete wharf and dredging; construction of building, etc., etc.			63,290 40
Martin head....	Outstanding accounts in connection with the construction of lighthouse, etc. last year			74 46
Maisonnette....	Outstanding accounts in connection with construction of light-house, etc. last year			329 90
Musquash	Expenses re search and deed of land			15 80
Neguac.....	Outstanding accounts from last year, and registration of deed, etc.			248 34
Partridge island.	Provision and erection of 3rd order dioptric lens and 10-foot Canadian lantern	Day labour	G. N. Breen	7,122 75
Petit Rocher	Erection of pole light with shed at base	"	D. J. Gallagher	128 98
Pokemouche...	Outstanding accounts in connection with the improvement of apparatus			575 23
Pompey ledge..	Repairs to concrete base			458 93
Quaco.....	Provision and installation of standard class "B" diaphone plant	Day labour	F. J. Lewis	2,629 33
St. John range lights	Moving wires to the front light			22 04
St. John harbour	Repairs and alterations to buildings			525 23
	Changing superstructure of buoys, etc.			
St. John West..	Repairs to heating pipes.....			59 25
St. Andrews	Land registration fee			0 85
St. Louis gully	Land registration fee			1 25
Spruce point....	Outstanding accounts in connection with the improvement of apparatus			304 51
Swallowtail....	Outstanding accounts in connection with the construction of fog alarm building			65 05
Miscellaneous expenses	Materials, etc., in connection with the establishment of buoys and beacons			1,854 53
	Travelling expenses of local officers, salaries of erectors, etc.			7,321 66
	Total expenditure for New Brunswick			108,537 81

SESSIONAL PAPER No. 21

PRINCE EDWARD ISLAND.

CHANGES AND IMPROVEMENTS IN EXISTING AIDS.

Lightstation.	Nature of the work.	How performed.	Contractor or foreman.	Expenditure during fiscal year.
				\$ cts.
Blockhouse point.....	Provision and installation of 7-foot cast iron lantern..	Day labour	M. Walsh...	599 35
Cape Bear.....	Installation of 4th order mercury clock.....	"	M. Walsh.....	822 41
East point.....	Provision and installation of single flash reflector, etc.....	"	M. Walsh.....	1,557 48
North Rustico.	Building new end to outer range pier	Contract	G. LeClaire	450 00
	Land registration			1 00
Summerside	Addition to back range light tower	Day labour....	G. L. Gaudin.....	212 63
Miscellaneous expenses.....	Materials, etc. in connection with the establishment of buoys and beacons			705 50
	Total expenditure in Prince Edward Island			4,348 40

HUDSON BAY.

Marsh point.	Erection of steel skeleton tower..			74 29
	Provision of tower		Goold, Shapley & Muir.	982 65
Port Nelson.....	Erection of skeleton tower also work at Cape Tatnam including wages, transportation, etc.	Day labour.....	Hudson Bay Railway...	6,471 39
Miscellaneous....	Provision of Aga accumulators, etc.			1,477 73
	Total expenditure in Hudson bay..			9,006 06

QUEBEC.

NEW AIDS TO NAVIGATION.

Anse au Beaufils.	Provision of hand fog horn..			18 12
Baie St. Paul....	Provision of hand fog horn			18 72
Grande Bergeronne.....	Erection of wooden open framework range towers.	Contract	D. Gauthier..	370 00
	Inspection, provision and erection of apparatus			108 50
Ile au Marteau.	Erection lighthouse, dwelling, oil shed and boathouse	Contract	S. Menier ..	3,573 00
	Inspection, provision of 5th order apparatus, etc			567 00
Matane.....	Erection of mast and wooden framed tower. Provision and installation of apparatus, etc.	Day labour.....	F. E. Cote.....	437 93

CHANGES AND IMPROVEMENTS TO EXISTING AIDS.

Bicquette.....	Repairs to tower.	Day labour...	D. Bilodeau	60 24
Cap au Corbeau.	Erection of wooden lighthouse tower on wharf.....	Contract.	J. Guillemette....	490 00
Cap au Corbeau range.	Steel towers furnished by special contract.		Gould, Shapley and Muir Co.....	668 50
	Erection of steel skeleton range towers	Contract.....	H. Trudel.....	4,123 75
	Inspection, provision and erection of apparatus, etc.....			4,585 36

7 GEORGE V, A. 1917

QUEBEC—Concluded.

Lightstation.	Nature of the work.	How performed.	Contractor or foreman.	Expenditure during fiscal year.
				\$ cts.
Cape Anguille..	Shingling coal shed.....			36 00
Cape Bauld.....	Freight, erection of apparatus, etc.....	Day labour..	R. L. Kelso.	2,241 94
Cap d'Espoir....	Provision and installation of revolving gear.....	"	J. U. Dube	78 87
Cape Norman...	Repairs to pond.....	"	F. E. Cote....	607 22
Cape Ray.....	Rebuilding concrete dam.....	"	E. H. Rennie.	119 50
Cap des Rosiers.	Fog alarm steam plant converted into an oil plant.....	Day labour.	E. Lavergne.	3,506 07
Fame point.....	Purchase of site, etc.....			424 50
Flat island.....	Provision and installation of revolving gear.....			35 34
Flower island....	Installation of apparatus.....	Day labour.		114 81
Grand Entry....	Completion of repairs to pier	Day labour.		80 00
Hospital rock...	Extension made to front light-house	Contract....	J. L. Lavoie.	235 00
Kamouraska island.....	Provision and installation of 4th order dioptric lens.....	Day labour.	J. U. Dube	3,380 63
Ile Verte	Building sidewalk.....			97 03
Magpie.....	Back light moved to new location	Contract.	A. Dupuis.	13 60
Maquereau point	Purchase of site.....			40 00
Newport point..	Purchase of site.....			25 00
Paspébiac	Provision and installation of revolving gear.....	Day labour.	J. A. Dube.....	75 05
Percé.....	Completion of the erection of concrete tower.....	Contract....	J. Boucher, Perce.	1,845 00
	Installation of apparatus, inspection, etc.....			555 72
Peribonka.....	Erection of oil-shed.....	Contract	E. Cote.....	125 00
Point Amour....	Installation of oil plant.....	Day labour.	E. Lavergne.	516 86
Pointe à Basile..	Provision and installation of 25-inch long focus reflector.....	"	J. U. Dube	66 38
Ferolle point..	Outstanding accounts.....			64 30
Pointe des Monts	Sheathing piers.....	Day labour.	Lightkeeper.	123 79
Point Peter.....	Provision and installation of 4th order dipotric lens and 35 mm. burner.....	Day labour.	J. U. Dube	3,688 43
Portneuf-en-bas..	Protection work.....	"	E. Tremblay.	479 50
Price Monument.	Installation of beacons at the front and back light.....	"	J. Tremblay.	95 30
Rivière à la Martre.....	Construction of fence.....			95 00
Red Islet.....	Provision of apparatus.....			1,266 58
River St. John..	Outstanding accounts incurred last year.....			94 70
St. Francois....	Construction of oil shed.....	Contract....	O. Emond.	75 00
St. Mary island.	Provision and installation of revolving gear.....	Day labour.	F. Parent..	192 84
Thunder river..	Purchase of site and legal expenses			1,258 31
	Construction of range lights.....	Contract. . .	J. B. Dignard.....	
	Raising back light tower.....		(Contract price, \$375.00)	
Upper Traverse pier.....	Repairs.....	Day labour.	J. Blanchette.....	11,121 46
Miscellaneous expenses.....	Materials in connection with the establishment of buoys and beacons.....			1,421 53
	Expenses incurred in the several workshops, including wages, material, power, etc., the salaries of erectors, wages and traveling expenses of officials, telegrams and general upkeep of agency.....			41,639 63
	Total expenditure for Quebec			90,058 14

SESSIONAL PAPER No. 21

MONTREAL DISTRICT.

NEW AIDS TO NAVIGATION.

Lightstation.	Nature of the work.	How performed.	Contractor or foreman.	Expenditure during fiscal year.
				\$ cts.
Calvaire.....	Erection of range lights, front, wooden tower; back, steel skeleton tower	Day labour....	A. Martin.....	2,472 66
	Provision of steel tower, apparatus, erection, etc.....			
Cascades	Purchase of sites, etc.....			431 33
Dixie	Erection of range lights, front, wooden tower, back, steel skeleton tower.....	Day labour...	J. D. Weir.....	7,923 05
	Provision of apparatus, etc.....			
Ile aux Sables..	Erection of three wooden light-house towers to form two sets of ranges.....	"	J. D. Weir.....	11,332 73
Ste Emmélie..	Erection of steel skeleton range light towers.....	"	A. Martin.....	2,517 59
	Provision and installation of apparatus.....			

CHANGES AND IMPROVEMENTS TO EXISTING AIDS.

Contrecoeur.....	Erection of mast range lights with shed at base.....	"	H. Champagne.	459 87
Dorval.....	Repairs.....		T. W. Weir	153 05
Daigneault.....	Erections of mast range lights with shed at base.....		H. Champagne	431 80
Grondines.....	Land registration, etc.....			54 50
Hebert point	Expenses re site.....			18 60
Ile de Grace.	Expenses re plan and acquisition of site.....			111 05
Ile du Milieu.	Outstanding accounts.....			56 35
Ile Deslauriers	Illuminating apparatus improved			101 99
Ile du Moine..	Provision and installation of 5th order Holophote lens.....	Day labour.		555 68
Ile Perrot.....	Land registration, etc.....			15 00
Lavaltrie.....	Purchase of site and erection of range lights (will be completed next year).....	Day labour.	J. D. Weir.....	336 88
Lacolle.	Erection of new steel skeleton tower for the back light and installation of apparatus.....	"	C. J. Hartley.	1,916 08
L'Orignal.	Outstanding account a balance on contract (work done last year).....			1,288 67
Melocheville	Completion of work started last year.....			683 98
Petite Ile course	Purchase of sites.....			28 60
Pointe à la Meule	Purchase of right of way.....			35 00
Ste Anne de la Perade.....	Purchase of site and legal expenses.....			100 07
Sorel	Repairs and painting sheds....			211 56
St. Mark point	Expenses re site.....			6 45
St. Onge traverse	Purchase of site, etc.....			115 10
St. Valentine range.....	Land registration, etc.....			3 95
Montreal Agency	Repairs and fittings to boats and scows used on construction work pay and board of crews including <i>Hosanna, Lenore, Napoleon, Margot, Quebec, Prescott, Reserve</i>			12,888 51
	Materials, etc., in connection with the establishment of buoys and beacons.....			1,912 44
Yamachiche.	Construction of concrete day beacons.....			181 62

MONTREAL DISTRICT—*Concluded.*

Lightstation.	Nature of the work.	How performed.	Contractor or foreman.	Expenditure during fiscal year.
Miscellaneous ex- penses	Travelling expenses of officials, salaries of foremen, telegrams, etc.			\$ cts.
				9,242 62
	Total expenses for Montreal Dis- trict			52,742 78

ONTARIO.

NEW AIDS TO NAVIGATION.

Cobourg	Construction of reinforced con- crete beacon and Aga instal- lation	Day labour	W. B. Lemont	2,834 09
Livingstone channel.	Construction of reinforced con- crete tower on pier..... Provision of 3rd order dioptric lens 10 ft. lantern and 35 m.m burner and incidental expenses	Contract	A. T. C. McMaster.....	8,490 00
				3,259 98
Main Duck island.....	Erection of fog alarm building, provision and installation of type "F" diaphone and class "D" plant	Day labour.....	M. J. Egan	8,870 11
Nottawasaga river	Erection of range pole lights with shed at base.....	"	W. B. Lemont	230 63
Pelee island....	Installation of wharf light and provision of hand fog horn			30 52
Point Abino	Land registration fee			1 43
Roberts island	Erection of 35 ft. wooden beacon.	Day labour.....	Public Works Depart- ment	79 04
Scudder wharf	Installation of wharf light and provision of hand fog horn			30 21
Turning rock...	Wooden lighthouse tower former at Midland point moved to Turning rock	Day labour	J. Fitzpatrick	885 10
	Provision and installation of Aga lighting system.			
Winnipegosis....	Erection of range pole lights also erection of wooden lighthouse tower and shelter shed	Contract	J. Neely (contract price, \$1,750)	1,502 91
	Provision and installation of 5th order dioptric apparatus, ins- pection, etc. Work started last year.			

CHANGES AND IMPROVEMENTS IN EXISTING AIDS.

Agate island....	Provision and installation of 6th order lens.....	Day labour....	J. Montgomery.	268 35
Badgeley island.	Iron hand rail.....			1 50
Barriefield common.....	Provision and installation of two Piper headlight lanterns....			227 54
Baskin wharf....	Land registration.....			2 30
Battle island..	Completion of the construction of fog alarm, building concrete tower, etc., started last year	Day labour.	M. J. Egan, J. Montgo- mery..	4,416 52
Bishops bay....	Rebuilding boat house.....	"	G. Montgomery.....	98 06

SESSIONAL PAPER No. 21

ONTARIO—Continued.

Lightstation.	Nature of the work.	How performed.	Contractor or foreman.	Expenditure during fiscal year.
				\$ cts.
Brébeuf...	Provision and installation of long focus reflector.....	Day labour.		138 29
Brighton...	Repairs to lighthouse and pier No. 3.....	"	W. B. Lemont.	482 01
Bronte.....	Repairs to lighthouse tower.....	"	W. B. Lemont.	46 11
Bustard rocks	Construction of dwelling and boat-houses.....	Contract...	J. McIntosh.....	2,188 00
	Inspection.....			88 00
Cape Croker...	Chance installation replaced by 55m.m Diamond installation.	Day labour.	J. Fitzpatrick....	367 33
Carling rock...	Land registration, etc., and provision of Aga installation.....			797 40
Cherry island	Land registration.....			70
Cole shoal.....	Construction of wooden lighthouse tower.....	Contract..	E. H. Horton....	1,100 00
	Purchase of site, inspection, provision of apparatus, etc.....			903 20
Cox reef.....	Registration of site.....			10 00
Depot island..	Provision and installation of Aga system.....			884 00
False Ducks....	Repairs to lighthouse.....	Day labour...	M. J. Egan.....	734 04
Fort Malden....	Purchase of sites, right of way, etc.....			549 24
Gibraltar point..	Illuminating apparatus improved by the installation of a 4th order dioptric lens.....	Day labour...	J. Montgomery.....	687 49
Goderich.....	Removal of old range light pole.	"	B. Macdonald.	15 50
"Gull" launch.	Repairs.....			63 00
Haileybury	Installation of Piper lantern.....	Day labour...	R. C. Budd.....	44 23
Hope island.....	Illuminating apparatus improved by the installation of triple flash long focus reflector and 35m.m burner.....	Day labour...	J. Fitzpatrick....	938 33
Jones island....	Illuminating apparatus improved by the installation of duplex lamp and 25" long focus reflector	Day labour..	J. Fitzpatrick.....	105 99
Killbear point..	Provision and installation of Aga system.....			805 83
Little Current..	Construction of day beacons....	Day labour...	M. J. Egan.....	181 41
Lonely island...	Provisions and installation of 55m.m burner.....	"	J. Fitzpatrick...	363 35
Long point	Construction of 90 ft. reinforced concrete tower..... (will be completed next year).	Contract..	C. Mattaini—contract price, \$8,8490.	2,970 00
Lyal island.....	Provision and installation of double flash reflector and 35 m.m burner.....	Day labour	J. Montgomery	107 25
Martin island...	Construction of shelter sheds and walk.....	"	T. H. Brewer..	189 26
McQuestion point.....	Erection of wooden lighthouse tower.....	Contract..	C. L. McCool..	500 00
	Inspection.....			20 00
Michipicoten E. end.....	Repairs to wharf, etc.....	Contract..	Lightkeeper—contract price, \$200.....	205 36
Middle island..	Construction of boathouse, oil shed and reshingling of dwelling.....	Day labour	T. H. Brewer..	870 93
Middle channel..	Construction of three beacons...			227 75
Mission channel.	Repairs to range lights.....			16 00
Mink island.....	Outstanding account.....			34 20
Mississagi strait.	Steam plant replaced by Class "D" duplicate plant.....	Day labour.	J. Montgomery....	4,973 51
	Alterations to fog alarm building		W. B. Lemont	
Otter head....	Installation of clockwork mechanism.....			6 50

ONTARIO—Concluded.

Lightstation.	Nature of the work.	How performed.	Contractor or foreman.	Expenditure during fiscal year.
				\$ cts.
Owen Sound...	Re-erection of burned lighthouse tower.....	Day labour. .	J. Fitzpatrick .	291 05
Parry Sound Agency.....	Erection of reinforced concrete chimney, construction of concrete walk, etc.....			519 42
Peter rock....	Installation and provision of new clockwork mechanism and extensive repairs to protection to pier, will be completed next year.....	Day labour. .	M. J. Egan..	5,606 07
Pointe aux Pins..	Repairs to lighthouse tower....	Day labour.	T. H. Brewer .	56 70
Point Clark	Repairs to buildings.....	"	T. H. Brewer	661 38
Point Porphyry.	Clearing land and erection of wooden boathouse and slipway	"	T. H. Brewer .	841 48
Port Burwell.	Installation of gas.....	"	Lightkeeper....	117 07
Port Colborne...	Installation of Aga accumulator and lantern	"		1,000 77
Port Dalhousie..	Installation of new occulting mechanism.....	"	S. Nieforth.....	69 76
Port Stanley...	Repairs to fog alarm station	"		246 96
Rainy river.....	Repairs to piers of the range lights	"	C. W. Belyea (Agent).	951 27
Red rock..	Land registration.....			2 40
Rondeau	Repairs to berakwater.....	Day labour.	W. B. Lemont.....	724 59
Sault Ste. Marie.	Repairs to lower front range tower.....	"	T. H. Brewer.....	85 64
Selkirk.....	Erection of poles and concrete bases for same.....	"	J. A. Howell.....	110 05
Sister rock.....	Provision and installation of Aga system			807 99
Snug harbour..	Illuminating apparatus improved			114 43
Spruce shoal....	Repairs to beacon.....	Day labour.	W. B. Lemont.	877 17
Hog island.....	Repairs to concrete pier.....	"	W. B. Lemont.	92 90
Strawberry island.....	Provision and installation of 4th order dioptric lens.....	Day labour.	J. Fitzpatrick..	537 76
Thames river...	Construction of oil shed and repairs to walk started last year	Day labour.	T. H. Brewer..	107 58
Telegraph narrows	Repairs to lighthouse foundation	"	W. B. Lemont.	281 59
Three Mile point	Provision and installation of Aga system.....			802 58
Tobermory.....	Purchase of site.....			50 00
Trenton.....	Repairs.....			33 48
Victoria island	Land registration fees, etc.....			6 35
Valleyfield..	Repairs to pier.....	Day labour.	J. Lindsay.....	431 67
Welcome islands	Illuminating apparatus improved and made occulting—complete last year.....	"	J. Montgomery..	594 09
Miscellaneous expenses.	Materials, etc. in connection with the establishment of buoys and beacons.....			17,600 83
	Travelling expenses of officers and expenses of temporary help, erectors, etc., etc.....			13,970 93
	Total expenses in Ontario..			\$ 134,982 15

BRITISH COLUMBIA.

NEW AIDS TO NAVIGATION.

Comox bar....	Erection of wooden range towers, and provision of 4th order lens for front and 18" reflector for the back tower.....	Day labour...	W. H. P. Trowsdale.....	2,756 39
---------------	--	---------------	-------------------------	----------

SESSIONAL PAPER No. 21

BRITISH COLUMBIA—*Concluded.*

Lightstation.	Nature of the work.	How performed.	Contractor or foreman.	Expenditure during fiscal year.
				\$ cts.
Drew harbour...	Erection of an unwatched beacon.	Day Labour...	Crew of CGS. <i>Quadra</i>	984 51
Fraser river N. arm.....	Changing position of inner light...	Contract.....	Fraser River Pile Driving Co.....	298 00
Idol point.....	Erection of unwatched acetylene beacon....	Day labour	Crew of CGS. <i>Leebro</i>	2,038 59
Scarlett point....	Installation of Class "B" diaphone plant.....	"	W. H. P. Trowsdale....	5,134 14
CHANGES AND IMPROVEMENTS IN EXISTING AIDS.				
Addenbrooke...	Erection of pedestal and railing..	Day labour	Crew of C.G.S. <i>Quadra</i> ..	123 42
Amphritite point.....	Outstanding accounts in connection with the erection of lighthouse last year.....			128 42
Brockton point..	Erection of concrete tower and improvements to protection work between Brockton point and Prospect point.....	Contract	Vancouver Parks Board (supervisors).....	8,940 84
Cape Mudge....	Erection of 42 foot reinforced concrete tower, provision and installation of 8 foot lantern and quick flashing apparatus	Day labour	H. L. Robertson.....	8,503 81
Carmanah.....	Repairs to lightstation and construction of aerial tramway....	"	W. H. P. Trowsdale...	707 45
Clarke rock.....	Erection of concrete beacon.....	"	Crew C.G.S. <i>Quadra</i>	129 54
Digby island....	Purchase of cooking range and hot water boiler for the bunk house.....			110 80
Entrance island..	Provision and installation of type "B" diaphone plant.....	Day labour	Cullison	2,947 67
First Narrows..	Driving of piles for protection to West side of lighthouse and dwelling.....	Contract	Vancouver Pile Driving Co.....	149 56
Green island.....	Chance installation replaced by 55 mm. diamond installation..	Day labour.	A. M. Connorton.....	358 01
Lake Laberge...	Freight on beacons.....			164 69
Maple point.....	Re-construction of 5 pile beacons.	Contract....	J. MacDonald & Co., Victoria.....	205 00
Masset	Construction of bridge	Day labour	Indian Agent.....	142 04
McLoughlin point.....	Laying water main.....	Contract....	Esquimalt Waterworks.	100 00
Middle rock....	Improvements to beacon.....			53 31
North point....	Erection of concrete beacon.....	Day labour	Crew C.G.S. <i>Leebro</i>	154 57
Pachena point...	Construction of shed.....	"	Lightkeeper.....	51 23
Prospect point..	Installation of mechanical fog bell.....	"	R. Nicholson.....	401 02
Pulteney point..	Hand fog horn replaced by mechanical fog horn.....	"	J. L. Cullison.....	121 91
Shark spit.....	Erection of pile dolphin.....	Contract....	J. MacDonald & Co.....	250 00
Triangle island.	Chance installation replaced by 85 mm. diamond installation.	Day labour	Crew C.G.S. <i>Quadra</i>	513 28
Victoria harbour	Erection of beacons.....	"	Crew C.G.S. <i>Estevan</i>	68 77
White rocks...	Installation of Aga system.....	"	W. Brown.....	2,227 09
Miscellaneous expenses.	Materials, etc., in connection with the establishment of buoys and beacons.....			405 89
	Salaries of foremen, travelling expenses of local officers, telegrams, etc. Also labour in connection with improvements to depot.....			6,348 37
	Total expenditure in British Columbia.....			44,530 38

7 GEORGE V, A. 1917

HEADQUARTERS.

Lightstation.	Nature of the work.	How performed.	Contractor or foreman.	Expenditure during fiscal year.
Miscellaneous ex- penses	Including travelling expenses of officers, blue print work, unforeseen expenses, photographic work, salaries of foremen, etc..			\$ cts. 10,207 61

RECAPITULATION BY PROVINCES.

	\$ cts.
Nova Scotia	110,155 32
New Brunswick.....	108,537 81
Prince Edward Island..	4,348 40
Quebec district.....	90,058 14
Montreal district.....	52,741 78
Ontario and Northwest	134,982 15
British Columbia.....	44,530 38
Hudson bay.....	9,006 06
Headquarters.....	10,207 61
Grand total expended	564,567 65

ENCLOSURE "B".—Details of Lightstations and other Aids to navigation in Canada, connected by telegraph or telephone with commercial centres.

NEW BRUNSWICK (Bay of Fundy side).

Station.	Connected with.	Length of miles	Description.	Constructed by.	Year.	Cost of establishment.	Vote to which charged	Remarks.	File.
Gannet rock	Three Sister Is-d	7½	Phone cable	Govt. Telegraph Ser-vice, P.W.D.	1910				
Southwest head Grand Manan.	Seal Cove	5½	Phone	Govt. Telegraph Ser-vice, P.W.D.	1890		Govt. Telegraph Ser-vice, P.W.D.	Govt. pays commission on tolls originally tele-graph, changed in 1897	20,007M
White Head ledges Mc saving station.	Wood island	2¼	Phone	Govt. Telegraph Ser-vice, P.W.D.	1910				
Big Duck island fog alarm	Woodward Cove	2¼	Phone, cable	Govt. Telegraph Ser-vice, P.W.D.	1910		Govt. Telegraph Ser-vice	Connected with Grand Man. Telephone Co's line.	
Swallowtail	Flags Cove	1¼	Phone	Govt. Telegraph Ser-vice, P.W.D.	1895				
Point Lepreau	Trunk line	1½	Phone	New Brunswick Tele-graph Co.	1905		Meteorological Service	Previous to 1905 a tele-graph service was maintained.	10746
St. John, N.B.	City system	100 yds	Phone and telegraph	New Brunswick Tel Co., Western Union Tele-graph Co.					
Partridge island	Fort Dufferin	1	Telegraph and Phone cable	N. B. Tel Co.	1900	\$130 per annum.	Govt. Telegraph Ser-vice, P.W.D.	3 cables to Island; 1 to Quarantine; 1 to Mar-com station; 1 to Signal station.	18196
Quaco	Whitney's corner	2¼	Phone	St. Martins Telephone Co.	1897	\$130 per annum.	Meteorological Service	\$30 per annum by Signal Service; \$60 per annum by Meteorological Ser-vice	13999

NOVA SCOTIA.

Cape d'Or fog alarm	Advocate Digby	3	Phone	N. S. Telephone Co	1907			Rental	20141M
Pont Prim		5	Phone	Maritime T & T Co	1895	\$280	Borne by private com-pany.	Rental \$30 per annum	20169M
Bayview life saving sta-tion.	Yarmouth	7	Phone with cable	Yarmouth Telephone Co.	1903			Rental \$30 per annum	
Cape Fouchu								Operated by Maritime Tel. and Phone Co., Ltd. Department pays \$30 per annum.	20204M
Seal island	Clarks harbour	14	Govt. telegraph ser-vice, P.W.D.	Barrington Telephone Co	1914			Cable broken in Feb 1916	
Cape Sable.	Barrington	17½	Phone with cable	Barrington Telephone Co	1897			Cable out of repair....	

ENCLOSURE "B". Details of Lightstations and other Aids to navigation in Canada, connected by telegraph or telephone with commercial centres (continued).

NOVA SCOTIA (continued).

Station.	Connected with.	Length of miles.	Description.	Constructed by.	Year	Cost of establishment.	Vote to which charged.	Remarks.	File.
Salvages fog alarm.....	Port Latour.....		Phone and cable	Cable land line by Pt. Latour Telegraph Co. at Port Latour	1914	\$150	Govt. Tel. Service, P.W.D.		20249C
Coffin island	Beach Meadow	2	Phone and cable	Cable by Govt. Telegraph Co., P.W.D.	1912			Operated by Maritime T. and T. Co. phone Co. Cable broken and out of operation in Feb. 1916. Dept. pays toll.....	29401
Saumbro island	Chebueto head.....	5½	Phone cable	Govt. telegraph service, P.W.D. Marine Department.....	1898	\$250 per annum.	Telephone.....	Operated by Militia Dept. by Militia Dept. Rental \$15 per annum..	29401
Chebueto head.....	Trunk line to Halifax. Halifax.....	2½	Phone	N. S. Telephone Co.....	1898				
Camperdown.....		...	Telegraph and phone...	Marine Tel. and Tel. Co.	1904				
Halifax..	City system..	¾	Telegraph and phone...	Marine Tel. and Tel. Co.	1906				
Devil island lifeboat station	Dartmouth.....	10½	Phone.....	Naval Service Department.	1913	\$613	Life Saving Service		29401
Sable island.....	All island stations... Mainadieu Village..	16 3½	Phone Phone cable	Marine Department..... Govt. Tel. Service, P.W.D.	.... 1904				
Scatari East end	Mainadieu lt. house..	7¼	Phone.....	Govt. tel. service, P.W.D.	1903	\$200	Telephone connection..	Cable from Cape Breton Island and connections with E. and W. light-houses and life boat station	
Flat point.....	Sydney	12	Telegraph.....	Western Union Telegraph Co.	1881	\$635 40	Govt. Telegraph Service, P.W.D.	Tolls connected with signal station.	
Cape North light (Money Point).	Bay St. Lawrence...	8	Phone.....	Govt. tel. service, P.W.D.	1909				32782 6022
St. Paul island main station	Money point, C.B....	22	Cable	Govt. tel. service,	1891				
St. Paul island (N.E. light)	Main station.....	2½	Phone.....	Marine Department	1909	\$200 00	Rewards for saving life..		
St. Paul island (S.W. light)	Main station	2½	Phone		1905				
Cheticamp.....	Eastern harbour	6.8	Phone.....	Marine Department.....	1912	\$462 51	Rewards for saving life	Telephone line connects lookout station, life-boat house, and Cheticamp lighthouse.	31900
Eastern harbour lifeboat station	Eastern harbour	1½	Phone.....	Marine Department....	1912	\$789 02	Rewards for saving life..		
Henry island.....	Port Hood.....	6½	Telegraph and cable	Govt. tel. service, P.W.D.	1907			Cable out of repair in Feb. 1916.	27962
Point Tupper.....	Public system.....	1 1 1	Telegraph..... Phone	N. U. Telegraph Co.... N. S. Telephone Co.	....			

SESSIONAL PAPER No. 21

PRINCE EDWARD ISLAND.

Cape Bear	Murray harbour S	41	Phone	P. E. I. Telephone Co.	1903	\$32 per annum.	Dept. pays in addition tariff long distance rate.	14434
Georgetown Govt wharf	Town exchange		Phone	P. E. I. Telephone Co.	1911	\$18 per annum.	Discontinued when steamer ceased running to Georgetown. Rental \$50 per annum in a 5 yr. contract.	31571
East point.	Souris	24	Phone	P. E. I. Telephone Co.	1916	None		20676T

GULF OF ST LAWRENCE.

Esquimaux, N B ...	Chatham	45	Phone	N B Telephone Co.	1890		Dept. pays tolls	33279
Muscou point, N B ...	Shippagan	50	Phone and cable	N B Telephone Co	1913	\$4,506 11	Line now out of order	
Belle Isle, N End Nfld	South end station	11	Phone	Marine Dept	1903	\$1,218 75	Copper insulated wire No 12 resting partly on poles partly laid on ground.	
Point Amour (Labrador).	Pointe des Monts	454	Telegraph	Govt. telegraph service, P W D.	1901		Also Radio Telegraph station.	
Cape Ray, Nfld	Channel	12	Telegraph	Anglo-American Telegraph Co.	1883		Also Radio Telegraph station local regular tolls.	
Cape Race, Nfld	Trunk line to St Johns	8	Telegraph	Govt. Postal Telegraph line.	1881			

QUEBEC.

Brion island	Gros Ile	17	Phone	Govt. tel. service, P W D.	1895		Includes 12 miles cable.	
Old Harry, Magdalen isls. P Q.	Cape St. Lawrence		Cable	"				
Etang du Nord	Aurigny.	2	Phone	"	1880			
Amherst island, P Q	South point	23	Telegraph and cable	"	1880			
Heath point, Anticosti...	Southwest point	55	Telegraph	"				
Bagot bluff, Anticosti...	Anse a Fougere	41	Cable	"				
Southwest point, Anticosti	North shore system via Long point of Mingan, also S.W. point.	20	Cable	"				
Fegg island	Pentecost river	12	Phone	"	1905			
Pointe des Monts...	Bersimis	133	Telegraph	"	1883			
Point Macquereau...	Anse aux Gascons	5	Phone	C N W. Telegraph Co.	1900		Includes 13 miles cable	26906
Cap d'Espoir...	Cape Cove	14	Phone	"				
Cap des Roitiers	Fame point	24	Telegraph	"				
Fame point	Trunk line	3	Telegraph	"				
Cape Magdalen	Riv a la Martre	34	Telegraph	"	1881			
Itiviere a la Martre	Cape Chat	26	Telegraph	"				
Cap Chat	C N W. main line	1	Telegraph	"	1879		Operator paid by commission.	

ENCLOSURE "B".—Details of Lightstations and other Aids to navigation in Canada, connected by telegraph or telephone with commercial centres—*Continued.*

QUEBEC—*Continued*

Station	Connected with	Length of Miles	Description	Constructed by.	Year	Cost of establishment	Vote to which charged	Remarks.	File.
Matane	G.N.W. main line	1	Telegraph	G. N. W. Telegraph Co.	1879			On main line	
Little Metis	Village exchange	1	Phone	"	1912				
Father point.	Trunk line	6	Telegraph and phone	Montreal Telegraph Co.	1859			Also Radio Telegraph station with commercial rates charged on messages	
	Rimouski			National Telegraph Co.	1905			Disc in 1896	
Rivière du Loup	G. N. W. Trunk line	2	Telegraph	Govt. telegraph	1888			Private enterprise used for signal service to port	
Cape Salmon	Trunk line		Telegraph and phone	vice, P. W. D.	1909				
Cap à l'Aigle wharf	Trunk line	1	Telephone	Saguenay and Chaudière Telephone Co.	1912				
Murray Bay			Phone		1906			Dept. pays annual rental of \$25 per annum.	12146
St Irénée	Located in village office		Phone	G. N. W. Telegraph Co.	1889		Borne by company	Vessel reporting station	31916
L'Islet	Montmagny	6	Telegraph and phone	Bell Telephone Co.	1906		Telegraph service	Cable laid by govt to service	34208
Crane island	Quebec		Phone with cable	Bell Telephone Co.					27214
St Jean d'Orléans	City exchange and copper circuit with signal station Three Rivers.		Phone	"		\$7.665 per annum		Note: The stations from Quebec to Montreal are connected by a private line rented from B. T. Co.	34295
Quebec.			Phone	"					
The Bridge	Signal service office	6	Phone	"	1911				31290
St Nicholas	Quebec by iron circuit	2	Phone	"	1911				18732
Semaphore station.	St. Nicholas and signal office.			"					
Portneuf	Quebec by iron circuit	12	Phone	"					
	Quebec, Three Rivers	31		"					
	Ball.			"					
	Circuit and village system.	1	Phone	Cie de Telephone de Portneuf.	1908	\$70		Annual rental \$25. . . .	34287
Grondines		1	Phone	Bell Telephone Co.	1910			Cie de Portneuf	34289
Cap à la Roche	Three Rivers by iron	1	Phone	"	1907			Under water cable 3 miles Govt. pays rental.	19007
Deschallons	metalle circuit.			"				Ship reporting and also semaphore station.	25497
Point Citrouille	Three Rivers by copper circuit also 2 in circuit.	4	Phone	"	1914	\$594 per annum.			
Three Rivers	Separate copper circuit to Montreal.	1	Phone	"	1907		Ship channel work		34285

SESSIONAL PAPER No. 21

Sorel	Bell Tel. Co. Exchange.	3	Phone	"	"	34286
Bellmouth	St. Ours.	3	Phone	"	Ship channel work	
Verchères						
Cap St. Michel	Varennes	3	Phone	"	Ship channel work	34266
Long point	Signal Serv. Exchange	200 yds	Phone	"	\$45 per annum.	34294
	Montreal by iron metallic circuit.					
Montreal	Signal serv. private exchange connected by copper circuit with Three Rivers		Phone	"		34288
	Signal Off., Montreal					
Lachine			Phone	"		
Cascades	Coteau Landing	14	Phone	Railways and Canals.	\$215 per annum.	
	Vaudreuil Exchange		Phone	Bell Telephone Co		

ONTARIO.

Cornwall canal.	Town system		Phone	Bell Telephone Co		
Galops canal.	Cardinal		Phone	"		
Welland canal.	Commercial system		Phone	"		
Sault canal.	Commercial system.		Phone			
Point Pelee lifeboat station	Leamington	10½	Phone	Govt. Tel. Service.	1888	
Presqu'île	Brighton	7	Phone	P.W.D.	1911	
				W. W. Poste		
Toronto east gap.	City exchange.	1½	Phone	Bell Telephone Co	1910	
E. end Long point life saving station.	Port Rowan	28½	Phone	Life Saving Service.	1911	
				Marine Dept.		
Tobermory	Tobermory village.	1½	Telegraph	G N W Tel. Co	1888	
Cabot head	Brinkman Corners	11	Phone	Wm Gillies	1913	

ENCLOSURE "B".—Details of Lightstations and other Aids to navigation in Canada, connected by telegraph or telephone with commercial centres—*Concluded.*

ONTARIO—*Continued*

Station.	Connected with	Length of Miles	Description	Contracted by	Year	Cost of cable, in pounds	Notes to which charged	Remarks.	File
Mississauga strait	Mel drum bay	7	Phone	Private enterprise	1904	\$1,500—con- tributed towards east	Telegraph service	On line of cable to Cockburn island.	21964M
Triangle island	Estevan	133	Radio telegraph	Dept. Marine and Fish- eries	1907		Radio Telegraph Ser- vice, Naval Service		
Estevan	Hesquiat	64	Telegraph and phone	Govt. telegraph ser- vice, P.W.D.	1913			Also radio telegraph ser- vice	22201M
Lennard island	Tofino	35	Phone with cable	Govt. tel. service, P.W.D.	1912	\$1,500 to wards east	Telephone connection		
Amphitrite point	Uchequet	5	Phone	Dept. Marine and Fish- eries	1910		Materials supplied by Govt. Tel. Service—labour by Life-Saving crew	Operated by life-saving crew	
Sechart	Toquart	74	Telegraph	Govt. tel. service, P.W.D.	1907			Connected with Albern- (Clayoquot) Govt. line	25371
Cape Beale	Banfield	5	Phone	"	1896	\$90 per mile		Operated by Life-Saving crew Naval Service	
Pachena	Victoria-Cape Beale Govt. line	4	Phone	"	1907		Construction of lights.	Also a radio telegraph station	22264T and 25371
Carmanah	Victoria-Cape Beale Govt. line		Phone	"	1889				
Active Pass	Duncan	30	Phone and cable	"	1908		Govt. Tel. Service	Connected with C.P.R. Telegraph and B.C. Phone system—Tolls on Powell river Van- couver line	18095
Point Atkinson	White cliff	1	Phone	"	1913				
Brockton point	Vancouver	24	Phone	Meteorological service, Marine Dept.	1906	\$50	Meteorological service	Operated for semaphore service	30296
Prospect point	Brockton point	14	Phone		1910		Construction of lights	Tolls on commercial business Marine Dept. mes- sages free	7334
Entrance island	North Gabriola	3	Phone, cable	Govt. telegraph ser- vice, P.W.D.	1913	\$5,000			
Cape Mudge	Quathisli cove	3	Telegraph	"					

SESSIONAL PAPER No. 21

APPENDIX No. 2.

REPORT OF THE COMMISSIONER OF LIGHTS.

To the Deputy Minister of Marine and Fisheries,
Ottawa.

SIR,—I have the honour to submit the thirteenth annual report of this branch. The principal work performed has been an extension of the buoy and beacon services, together with the maintenance of lights and other aids to navigation throughout the Dominion, and the maintenance and inspection of public wharves under the control of the Department of Marine and Fisheries. The operations of this branch are set forth in tabular form in the following two inclosures, namely:—

Inclosure No. 1.—Statement, by districts, showing the number of lights of the several orders, gas beacons, lightships, lightboats, lightkeepers, fog signals, gas and signal buoys, submarine bells, lighted spar buoys, floats and dolphins, unlighted buoys, stakes, bushes, dolphins, spindles and beacons during the fiscal year ended 31st March, 1916.

Inclosure No. 2.—Statement, by localities, giving the number of unlighted buoys, stakes, bushes, dolphins, spindles and beacons maintained during the fiscal year ended 31st March, 1916.

In former reports it had been my habit to add further inclosures showing the names of lightstations and lightkeepers; a complete list of stations at which gas buoys were maintained; new establishments of gas and signal buoys; withdrawals; and statement giving complete list of stations at which submarine bells were maintained. As this information is already contained in other government publications, it is not repeated here.

In conclusion, I desire to express and record my appreciation of the able assistance rendered by my staff, and the untiring application to duty exhibited by each member. It would not have been possible to carry out the large and increasing amount of work which devolves upon this branch without the co-operation of all the officers connected with it.

I have the honour to be, sir,

Your obedient servant,

J. G. MACPHAIL,

Commissioner.

Office of the Commissioner of Lights,

Department of Marine and Fisheries,

Ottawa, 31st March, 1916.

INCLOSURE No. 1.—Statement, by districts, showing the number of lights of the several orders, lightships, lightboats, lightkeepers, fog-signals, buoys, submarine bells, etc.

	1st order lights.	2nd order lights.	3rd order lights.	4th order lights.	5th order lights.	6th order lights.	7th order lights.	Gas beacons.	Pressed lens lights & other minor types.	Catoptric lights.	Electric lights.	Total.	Lightships.	Lightboats.	Lightkeepers.	Diaphanes.	Fog guns and bombs.	Fog horns and trumpets.
New Brunswick		2	4	15	14	17	66	1	17	36	4	180	2	1	139	13		3
Nova Scotia	3	4	10	52	28	32	67		26	75	13	310	2		282	22	1	1
Prince Edward Island				15	2	2	5		4	51	1	83			52	1	1	1
Quebec	5	7	15	22	6	17	38	4	18	86	10	228	4		174	20	6	1
Hudson Bay and Strait								11				11						
Montreal				10	10	7	19		34	145	3	234	2		162			
Prescott			2	17	4	6	21	21	8		3	89			47	10		
Parry Sound		5	7	22	14	16	51	25	34	64	20	258	1		147	20		1
Kenora							3		2	2	2	9			5			
Manitoba				2	3		4		1	5	1	16						
British Columbia	5	1	5	12	9	3	18	2	11	5	16	137	1		82	24		
Total	13	19	43	171	90	100	295	120	155	476	73	1,555	12	1	1,099	110	8	7

	Fog whistle.	Sirens.	Fog bells.	Hand fog horns.	Hand fog bells.	Total fog signals.	Fog signal stations only.	Gas buoys.	Gas and whistle buoys.	Gas and Bell buoys.	Whistling buoys.	Bell buoys.	Total gas and signal buoys.	Submarine bells.	Lighted spar buoys, floats and dolphins.	Unlighted buoys.	Stakes and bushes.	Unlighted dol- phins, spindles and beacons.
New Brunswick	1		5	18		40	4	14	11	2	2	27	61	6		857	1,206	18
Nova Scotia	4		5	57		93	4	7	21	11	17	46	100	6		1,469	139	59
Prince Edward Island				2		5		1	5		4	5	15			395	292	4
Quebec	4	1		22	3	57	1	63		7	1	5	74	5	1	262	125	42
Hudson Bay and Strait																		
Montreal								87					87		1	520	170	128
Prescott			3	7		20		56		1		1	58		134	223	12	4
Parry Sound	2	1	4	32		61		37	4	8		2	51	1	38	450	28	19
Kenora																316		
Manitoba				4		4						2	2			24		
British Columbia			12	8		44	4	3	11	4	2	3	23	4	14	229		79
Total	11	2	31	151	3	323	13	246	52	33	31	80	451	22	188	4,745	1,972	353

SESSIONAL PAPER No. 21

INCLOSURE No. 2.—Statement, by localities, giving the number of unlighted buoys, stakes, bushes, dolphins, spindles and beacons maintained throughout the Dominion.

NEW BRUNSWICK DISTRICT.

Locality and number of stakes, etc.	No. of Buoys	Locality and number of stakes, etc.	No. of Buoys
Aldouane, 42 bushes.....	5	Miramichi river, northwest branch.....	14
Alma,...	3	Miramichi river, southwest branch.....	9
Baie Verte and Port Elgin, 30 stakes.....	6	Miscou.....	8
Baie du Vin.....	13	Musquash.....	4
Bartibog, 12 bushes.....	1	Napan river, 24 stakes.....	3
Bathurst.....	29	Neguac.....	19
Black Brook, Miramichi river.....	3	Petit Rocher.....	1
Buctouche, 34 stakes.....	22	Pokemouche, bushes.....	6
Buctouche river, 260 bushes.....		Richibucto.....	28
Campobello.....	10	Richibucto, Rexton and Browns yard.....	30
Caraquet.....	16	St. Andrews, 3 stakes.....	16
Caraquet to Mizzenette.....	3	St. Charles river, 50 stakes.....	
Chance harbour.....	2	St. John river, 154 stakes.....	79
Cocagne, 30 stakes.....	11	St. Louis, 35 bushes.....	9
Dalhousie and Restigouche.....	10	St. Louis river, 54 bushes and stakes.....	
Digdequash.....	6	St. Simon bay, 15 bushes.....	6
Dipper harbour.....	4	Salmon river, bushing.....	15
Dorchester.....	3	Scotchtown.....	6
Grande Anse.....	4	Shampers wharf, 15 stakes.....	2
Grande Digue, 30 stakes.....	2	Shediac.....	19
Grand lake, bushes.....	32	Shippigan, 27 pickets, 30 stakes, 1 beacon..	27
Grand Manan, 1 spindle.....	28	Tabu-intac.....	20
Grandon channel, Miramichi river.....	20	Tracadie, north gully, 100 bushes.....	12
Grassy island, 18 stakes.....	7	Tracadie, south gully, 30 bushes.....	5
Great Shemogue.....	7	Tynemouth creek.....	4
Hatfield point, bushes.....	1	Washademoak, 144 bushes.....	2
Indian point bar channel, 10 bushes.....	3	West isles, 4 spindles.....	23
Kouchibouguac and Black Lands gully.....	14	Maintained by agency—	
Letite, L'Etang and Bliss harbour.....	14	Bell buoys.....	25
Little Shemogue, 2 poles.....	5	Whistling buoys.....	7
Little Shippigan.....	4	Conical and can buoys.....	60
Magaguadavic.....	13	Spar buoys.....	39
Maquapit and French lakes, 57 stakes.....	13	Spindles.....	12
Miramichi bay and river, bushes.....	35		

NOVA SCOTIA DISTRICT.

Advocate harbour.....	6	Cooks cove (Toby cove).....	4
Amherst basin.....	4	Crooked channel.....	5
Apple river.....	8	Crow harbour.....	3
Ardoise.....	5	Denny river.....	3
Argyle river and sound.....	10	D'Escousse and Lennox passage.....	29
Arichat.....	19	Dover.....	4
Barrington, 11 dolphins.....	41	East bay, Bras d'Or.....	5
Bear river.....	8	East Dover.....	3
Beaver harbour.....	8	Eskasoni.....	6
Beaver narrows, C.B.....	2	Fourchu harbour.....	15
Birchton.....	5	Freeport, 1 beacon.....	3
Blandford.....	5	Gegoggin.....	7
Bridgewater.....	6	Gillies point, Boulaceet.....	1
Brule.....	9	Glace bay.....	4
Calf Island bay... ..	5	Goose bay, 35 stakes.....	8
Canso and St. Andrews passage, 20 winter buoys.....	27	Grand Etang.....	4
Cape Negro and Northeast harbour..	17	Great Bras d'Or.....	7
Caribou.....	6	Guysborough..	5
Chester and Gold river.....	28	Habitants bay.....	5
Cheticamp.....	12	Harrigan cove.....	3
Chezzetcook and Petpeswick.....	10	Havre Bouche, 6 stakes.....	4
Christmas island and Barra strait.....	11	Indian harbour.....	4
Clarks harbour.....	17	Ingonish, South bay.....	9
Cockerwitt pass.....	19	Isaac harbour, 9 winter buoys.....	13
Coddle harbour.....	6	Jeddore, winter buoys.....	9
		Johnson harbour.....	5

7 GEORGE V, A. 1917

NOVA SCOTIA DISTRICT—*Concluded.*STATEMENT, by localities, giving the number of unlighted buoys, etc.—*Con.*

Locality and number of stakes, etc.	No. of Buoys	Locality and number of stakes, etc.	No. of Buoys
Ketchikan harbour	6	River Bourgeois.	6
Kieley cove, Blind bay.....	4	River John, stakes.....	3
Lalave	6	River Philip..	6
Lary river, 7 stakes	3	Roseway.	5
Lascomb	6	St. Ann	12
Little Bras d'Or	12	St. Margaret bay	5
Little Dover	9	St. Mary river	11
Little Lascomb	4	St. Mary river to Shearbrook	18
Little Narrows.	10	St. Peter bay, 4 winter buoys	16
Liverpool	8	St. Peter inlet	12
Lockport	3	Sambro	15
Loxburg, 6 winter buoys	8	Shad bay	8
Lower Prospect.	10	Sage harbour	17
Lower Rose bay.	3	Scholar	5
Lundenburg.	8	Sheet Harbour, 5 winter buoys	9
Lundenburg, back cove	9	Ship harbour, lower, 6 winter buoys.	11
Lundenburg, middle south, 6 winter buoys	16	Shearbrook, strait of Canoe	1
Mahon, stakes.	20	Shed	8
Mahon bay.	9	Smith island, West bay	1
Magnolia	5	Smith island to Fort Macleod	22
Mable Mountain.	5	Song bay	4
Margaree harbour, 7 stakes	2	Stony island, Bad luck	1
M. de Joseph, 11 winter buoys	16	Sydney inner harbour	2
Mattus brook	6	Tancook island	3
McKenna harbour	6	Tanger, 7 winter buoys	7
Mc Nab cove	2	Tatamagouche, 40 stakes	18
McVarish shoal and Campbell point, Bras d'Or	4	Terence bay.....	3
Megomash, bushes	6	Three Fathoms harbour	5
Meguelier, 4 stakes	6	Tidnish, stakes	5
Musquodoboit..	14	Tide bay	21
Neal harbour.	1	Ticket river	9
Northport.	12	Ticket Wedge, 2 stakes	17
Orangedale	3	Upper Prospect	4
Parrishoro	6	Voglers cove	3
Pernant harbour.	9	Wallace, 33 stakes	11
Petidegrat, 6 winter buoys	18	Walton harbour	1
Pope harbour	3	Wachaback river	7
Port Bickerton, 3 winter buoys	5	West bay..	5
Port Felix, 1 stake.	11	West Chezzetcook	7
Port Hood, 2 winter buoys..	5	West Dublin..	12
Port l'Herbert	13	Weymouth.	19
Port Latour	15	Whitehaven, 5 winter buoys	8
Port Medway	4	Whycocomagh	4
Port Morien.....	1	Yarmouth, 44 dolphins	9
Port Mouton	9	Maintained by agency—	
Pringle harbour	2	Bell buoys	46
Pubnico.	21	Whistling buoys	17
Pugwash	8	Conical and can buoys	73
		Spar buoys.	29

SESSIONAL PAPER No. 21

PRINCE EDWARD ISLAND DISTRICT.

STATEMENT, by localities, giving the number of unlighted buoys, etc.—*Con.*

Locality and number stakes, etc.	No. of Buoys	Locality and number of stakes, etc.	No. of Buoys
Bay Fortune	3	Murray harbour and rivers, 25 stakes	37
Beach point	3	New London, 30 stakes.	17
Belle river	3	North river, 14 stakes	3
Brae harbour.....	5	Orwell and Vernon river, 36 bushes, 3 beacons	3
Brudenell river.	5	Pinette, 24 bushes	8
Cardigan, lower, 2 winter buoys.	7	Port Hill.....	12
Cardigan, upper	20	Pownal, 10 stakes	9
Cascumpeque	16	Rollo bay.	3
Covehead.	3	Rustico, 30 stakes	6
Crapaud, stakes.	6	St. Peter harbour, 6 stakes	5
East river, stakes and bushes.	14	Savage harbour	2
Egmont bay, north, 19 stakes..	9	Souris	4
Egmont bay, south, 13 stakes..	3	Summerside, 10 stakes.	10
Georgetown.	19	West point	2
Goose and Palmer harbours	5	West river, 65 stakes..	8
Grand river, 1 beacon, bushes	28	Wood islands	4
Grand Tracadie.....	4	Maintained by agency—	
Little Channel.	3	Bell buoys	5
Malpeque	17	Whistling buoys	4
Min. Inegash.	6	Conical and can buoys.	16
Montague, 10 stakes.	7	Winter spar buoy	19

QUEBEC DISTRICT.

Amherst harbour, Magdalen islands.....	9	Little river west.....	1
Anse a Beaufils.....	1	Maria.....	2
Anse aux Gascons.....	1	Matane.....	2
Barachois de Malbaie.....	1	Natahkwan	4
Beaudry shoal, Gaspé basin.....	1	New Richmond.....	3
Beauport.....	3	North channel, island of Orleans.....	13
Bonaventure.....	11	Nouvelle roads.....	2
Cap Chat.....	1	Paspebiac.....	1
Cape Cove.....	1	Pentecost.....	1
Cape d'Espoir.....	1	Perce	2
Carleton point.....	1	Point St. Peter.....	1
Echourie rock (Serpent reef).....	1	Port Daniel.....	1
Fox river.....	1	Portneuf en bas..	9
Gaspé.....	6	Restigouche river	12
Grand Entry, Magdalen islands.....	17	Ste. Anne river.....	1
Gros cap aux Os.....	1	St. Godfroy..	1
House harbour, Magdalen islands.....	11	St. Michel de Bellechasse.....	4
Lake St. John.....	14	St. Thomas de Montmagny..	8
Lake St. John, Ashuapmuchuan river, 30 bushes	7	Saguenay river, vicinity of Chicoutimi.	33
Lake St. John, Mistassini river, 60 bushes..	12	Maintained by agency—	
Lake St. John, Peribonka river and Rober- val, 35 bushes.....	16	Conical and can buoys.....	31
Little river east.....	1	Bell buoys.....	1
		Steel winter spar buoys.....	10
		Beacons.....	42

MONTREAL DISTRICT.

Lake Memphramagog.....	1	Yamachiche river, 30 balises, 4 day beacons	
Richelieu rapids, bushes..		Yamaska river, 60 balises, 6 day beacons...	
Richelieu river, above St. John.....	27	Maintained by agency—	
Richelieu river, Sorel to Chambly.....	37	Conical and can	76
Riviere des Prairies..	11	Spar buoys.	302
St. Francis river 80 balises, 12 day beacons			
St. Maurice river—Grandes Piles to Latuque 106 day beacons.....	74		

PRESCOTT DISTRICT.

STATEMENT, by localities, giving the number of unlighted buoys, etc.—*Con*

Locality and number of stakes, etc.	No. of Buoys	Locality and number of stakes, etc.	No. of Buoys
Lake Couchiching and narrows, 11 bushes..	8	Maintained by agency—	
Lake Simcoe.	5	Bell buoys	1
Presquile bay	17	Conical, can, spherical buoys..	22
Trent canal (number of buoys maintained by Dept. Railways and Canals)		Barrel buoys.....	2
		Spar buoys.	168
		Stakes.....	1
		Beacons.....	4

PARRY SOUND DISTRICT.

Blind river.	6	Port Arthur.	20
Burke shoal, lake Superior.	1	Port Rowan. .	10
Cache bay, lake Nipissing, 8 stakes....		River Thames	7
Clapperton channel, 1 beacon.....	8	Rondeau.....	6
Cloud bay, lake Superior.....	2	St. Clair river, Chenal Ecarte.....	1
Collingwood.....	13	St. Joseph channel, lake Huron, 1 beacon,	6
Detroit river.	25	winter buoys .	23
Goderich..	7	Southampton..	7
Grand reef, lake Superior.....	1	Sault Ste. Marie canal approaches.....	25
Kaministikwia river, Fort William, lake Superior..	15	South Baymouth.....	4
Lake Superior, southeastern part.....	7	Stokes bay.	6
Little Current.....	19	Sturgeon river, 20 stakes.....	5
Michipicoten	6	Victoria island, lake Superior.....	3
Mud lake, river St. Mary, 2 beacons.....	11	Waubushene..	53
Mutton island, lake Superior.....	1	Maintained by agency—	
Pembroke..	27	Bell buoys.....	2
Penetanguishene	10	Conical buoys.	1
Pointe au Baril, 15 beacons.....	3	Spar buoys.	109

KENORA DISTRICT.

Maintained by agency .	316		
------------------------	-----	--	--

MANITOBA DISTRICT.

Black river.....	6	Warrens Landing.....	12
Red river.....	6		

BRITISH COLUMBIA DISTRICT.

Arrow lakes, upper and lower .	15	Maintained by agency—	
Coal harbour.	7	Bell buoys	3
Fraser river.	30	Whistling buoys.	2
Kootenay lake, northwest arm..	11	Conical and can buoys.	51
Pitt river	9	Platform buoys..	30
South Thompson river, 4 day beacons..	18	Spar buoys..	53
		Spindles..	2
		Day beacons.....	73

SESSIONAL PAPER No. 21

APPENDIX No. 3.

River St. Lawrence Ship Channel.

REPORT OF SUPERINTENDENT.

OTTAWA, July 27, 1916.

The Deputy Minister of Marine,
Ottawa, Ont.

SIR,—I have the honour to present the following annual report on the operations for the improvements of the river St. Lawrence ship channel and Signal service, during the fiscal year ending March 31, 1916, also on the ice-breaking operations during the winter of 1915-16.

I have the honour to be, sir,

Yours obediently,

V. W. FORNERET, B.A.Sc.,

Superintending Engineer.

HISTORY OF THE RIVER ST. LAWRENCE SHIP CHANNEL.

MONTREAL TO QUEBEC.

The St. Lawrence, owing to its situation, is the natural route from the Atlantic to the northern and northwestern half of the North American continent. The possibility of converting Montreal into a deep-water seaport was first suggested in the year 1825, when the Lachine canal was completed and connected Montreal with the Great Lakes, establishing the route commercially.

Light-draught sailing vessels could then reach Montreal without trouble except during a few weeks in the autumn, when they resorted to lightering. Surveys were made with the object of increasing the depth of water in the waterway. After these were completed, the question, of which channel to adopt through lake St. Peter was hotly discussed, some favouring the "natural" or old ship channel, and others the "straight channel" through the St. Francis bank. Finally it was decided to proceed with the work of deepening the "straight channel," the aim being to obtain a channel 150 feet in width and to a depth of 14 feet at the lowest water, instead of only 10 feet 6 inches at lowest water, as existed in the old ship channel which governed the available depth for navigation between Quebec and Montreal.

The "Board of Works" of Canada were entrusted with the task and began operations in the spring of 1844, and continued till the month of June, 1846, when the work was suspended; the management was changed, and the execution of the work transferred from the Board of Works to the control of the Commissioners of Public Works. The dredging was again resumed in the month of September of the same year. Owing to continued opposition, the work of cutting the "straight channel" was finally suspended on the 16th of September, 1847, and subsequently abandoned. After sixty years, it is now considered that

the "straight channel" as commenced, would have been preferable. Nothing more was done on lake St. Peter by the Commissioners of Public Works for three years. The Harbour Commissioners of Montreal then came forward and offered to complete the project expeditiously and economically. The proposal was accepted and an Act was passed in August, 1850, transferring the work of improving the ship channel from the Commissioners of Public Works to the Harbour Commissioners of Montreal, who were empowered to charge a tonnage duty sufficient to pay 8 per cent interest upon the outlay with a 2 per cent contribution to the sinking fund.

16-foot Channel.—The Harbour Commissioners, after examination and the best advice obtainable, adopted the present channel with five tangents instead of two long straight courses, as at first commenced in the "straight channel". Operations were begun in June, 1851, to dredge this channel to 16 feet at low water. Most of the dredging required to attain this depth was in lake St. Peter, but some small shoals had to be removed at Ile Delorier and Lavaltrie channel, and after steady work it was all completed in 1854 to a depth of 16½ feet at low water, and with a width of from 250 to 300 feet.

20-foot Channel.—The work of deepening the channel to attain a depth of 20 feet at low water with a width of 300 feet was continued by the Harbour Commissioners and accomplished in November, 1865. Dredging was necessary at Pointe-aux-Trembles (en haut) channel and lake St. Peter to obtain this depth. Several obstructions had also to be removed in order to maintain a more direct channel between Cap St. Michel and Lavaltrie, and in Lavaltrie channel. The "south" or Verchères channel had been selected for improvement instead of the old channel or "north channel" by way of Repentigny and St. Sulpice.

The operations of 1866-9 were of limited extent, and consisted chiefly in cleaning up and improving the 20-foot channel which was obtained in 1865.

The completion of the 20-foot channel marked an important era in the history of the St. Lawrence route. The success of the work amply demonstrated that the St. Lawrence could be made available up to Montreal for navigation by the largest class of ocean merchant ships, and the extraordinary increase of Canadian commerce that attended the improvement of the channel showed how imperatively it was demanded by the trade of Canada. No sooner was the new channel fairly in use than the rapid increase of ocean traffic suggested a further deepening, and a vigorous agitation was commenced for a 24-foot channel at low water.

25-foot Channel.—It was then resolved to deepen the channel to 25 feet, which was accomplished in the fall of 1882. A new channel on the south side of the river, opposite Contrecoeur and parallel to the Lavaltrie channel was adopted for this channel, as it was wide and deep and required very little dredging. It was called the Contrecoeur channel. This gave a clear depth of 25 feet at low water at all points above Cap à la Roche, but at that point and Cap Charles an average tide was necessary to pass with the full depth available elsewhere. In the straight parts of the channel the minimum width was 300 feet and at the bends 325 to 450 feet.

27½-foot Channel.—Owing to the growth of trade, it was seen that still further improvement of the channel was required, and the Harbour Commissioners of Montreal obtained permission, by an Order in Council passed the 14th of June, 1883, to proceed with a further deepening to 27½ feet at low water. The work was vigorously pushed forward, and by 1888 the channel was completed to this depth from Montreal to Cap à la Roche, a distance of 107½ miles, from which point to Quebec the tide was necessary to obtain that depth. The channel was 300 feet wide in the straight portions, and 450 feet at the bends.

SESSIONAL PAPER No. 21

At this juncture the Federal Government, realizing that the tonnage charges upon the ship channel were detrimental to the mercantile expansion of Montreal, passed an Act in 1888, making the ship channel a national and not a local work, and relieved the Harbour Commissioners of their indebtedness with respect to the ship channel, and transferred the work, plant, etc., to the Department of Public Works.

The tonnage dues were abolished accordingly, so that, since the work came under federal control, the river St. Lawrence ship channel has been free to the commerce of the world.

The Harbour Commissioners carried on the operations for the Department of Public Works till the end of the season of 1888, when the official connection of the commissioners with the ship channel ceased, after having continued for over thirty-eight years.

In January, 1889, the control and management of the work was assumed by the Department of Public Works. During the winter, extensive repairs were made to the dredging plant, which, on the opening of navigation, was set to work at Cap à la Roche, Pouldier Rayer, and Cap Charles in deepening the channel at those points to $27\frac{1}{2}$ feet at low water, spring tides.

From this date to 1898, the Department of Public Works continued operations, and completed the difficult rock work at Cap à la Roche and Cap Charles to $27\frac{1}{2}$ feet at low water. In addition, many portions of the channel were cleaned up, straightened, and several curves and narrow places widened. Surveys were made and channels were dredged through several shoals between cap Charles and Quebec to avoid the necessity of waiting for the tide.

30-foot Channel.—The unusually low water of 1895 and 1897, and the increased size of vessels, urgently called for a wider and deeper channel, and larger and more powerful dredges and plant were required.

In 1899 the dredging plant was in a condition to warrant a more extensive plan of operations.

The low water of 1897, the lowest on record, except the short period of unusually low water of 1895, was adopted as the new datum for the 30-foot channel, and is nearly $1\frac{1}{2}$ to 2 feet lower than the ordinary low water plane of the $27\frac{1}{2}$ -foot channel. The object, therefore, was to realize in the shortest possible time, a channel 450 feet wide on the tangents and from 500 to 750 feet wide at the curves. An anchorage 800 feet wide was also to be provided at White Buoy curve in lake St. Peter. The work also included much straightening of the channel.

The ship channel continued under the control of the Department of Public Works until 1904, when an Order in Council was passed on March 11, transferring the management and control of the river St. Lawrence ship channel, together with the dredging and shipbuilding plant to the Department of Marine and Fisheries, so as to place the supervision of the improvements to navigation on the St. Lawrence route under the department directly responsible for the pilotage and aids to navigation.

Under this department, the work was vigorously continued, so that the season of 1907 saw the completion of the channel from Montreal to Batiscan to 30 feet depth at the extreme low water of 1897, a distance of 101 miles. From that point to Quebec, the tide could be used to obtain the same depth. There still remained, however, some widening in lake St. Peter. By the end of the season of 1910, the dredging was all completed to 30 feet to the head of Cap à la Roche curve, 6 miles below Batiscan, including all the widening between Montreal and that point. The completion of this work allowed more dredges to be placed in the Cap à la Roche district, where the dredging operations are the most difficult, the current being strong and the material to be removed mostly hard shale rock.

The dredging operations were then carried on with renewed energy and, considering the difficulty of working in this locality, good progress has been made, so that, at the close of the season of 1914, only about half a mile of deepening in the Cap à la Roche district was required, to give a depth of 30 feet at extreme low water. This is $4\frac{1}{2}$ feet greater depth than in the $27\frac{1}{2}$ -foot channel, as the low water plane adopted for the 30-foot project here is 2 feet lower than that of the $27\frac{1}{2}$ -foot channel. The widening is nearly completed.

The Cap à la Roche channel was widened from 300 feet to 450 and 550 feet, and the Cap Charles channel from 300 feet to 450 feet with 600 feet at the curve, and completed last season.

Grondines channel was also completed last season to a depth of 30 feet, with a width of 450 feet.

Both the Cap Charles and Grondines channels were opened for navigation during the season of 1915.

The only place that now requires dredging to obtain 30 feet between Cap à la Roche and Quebec, is at St. Augustin bar, 14 miles above the latter place. Advantage must still be taken of the tide, by deep-draught vessels, to pass this place. The range of tide being $16\frac{1}{2}$ at springs and 11 at neaps.

35-foot Channel.—In 1910 the question of further deepening was considered because the rapid increase in the size of vessels was likely to find the 30-foot channel too shallow. The Government therefore resolved to proceed immediately with the deepening of the ship channel to 35 feet at extreme low water of 1897, and in 1910 work started in lake St. Peter. Owing to the undulating character of the river-bed, dredging is not required throughout the whole length of the channel between Montreal and Quebec, as at some points the natural depth is more than sufficient to secure 35 feet at extreme low water.

Out of a total distance of 160 miles, 82.24 miles will require dredging. This work is now in active progress, and at the end of the season of 1915, 28.62 miles had been dredged to 35 feet, leaving 53.62 miles unfinished.

SHIP CHANNEL BELOW QUEBEC.

In the spring of 1901 the shipping interests of Montreal brought to the attention of the Honourable the Minister of Public Works, the fact that deep-draught vessels had to wait for the tide to pass St. Thomas and Crane Island shoals, which caused these vessels to lose a great deal of valuable time. The officers of the Marine and Fisheries Department at Quebec, who had an intimate knowledge of this part of the river, strongly recommended improving the north channel, commencing below the island of Orleans, as being much better, more easily navigated, and having less ice in winter than the south channel. Orders were given to the Ship Channel staff which was then under the Department of Public Works to make a survey and examination of the north channel with a view to reporting on the practicability and cost of improving that route and adopting it for navigation.

In 1902, a similar survey was made of the south channel, to ascertain what improvements would be required to make a 30-foot channel on the line of the existing route.

A comprehensive report was made on February 24, 1903, by Mr. F. W. Cowie, C.E., who was then superintending engineer to the acting chief engineer of the Public Works Department, on the question of the proposed improvements below Quebec.

The report did not recommend the adoption of either route, but advised that the choice should meet with the approval of the underwriters, the shipping interests, and the pilots.

SESSIONAL PAPER No. 21

The Transportation Commission visited the locality, going over each channel and taking evidence on the subject. It was finally decided to improve the south channel by dredging it to 30 feet at extreme low tide, and to a width of 1,000 feet.

The parliamentary appropriation, to enable the commencement of improving the south channel below Quebec, became available only late in the autumn of 1905. The ship channel dredging operations had been transferred to the Department of Marine and Fisheries in 1904. Arrangements were made to have a powerful steel twin-screw hopper hydraulic dredge, constructed at the government shipyard at Sorel. It was estimated that it would take a year and a half to build and equip this powerful machine, which was carefully designed for that special work.

In March, 1906, the Department of Marine and Fisheries received very strong representations that these improvements could not be delayed, and that to wait till 1907 to make a commencement would seriously menace the proposed plans for a largely improved steamship service. The nature of the work below Quebec, the exposed position, want of shelter, etc., made the ordinary American type of dredge out of the question.

The self-propelling sea-going hopper type, as almost altogether used in Great Britain being required, inquiries were made from the dredge builders in Great Britain and ship agents for a dredge immediately available, suitable for this work.

The builders had none on hand, and the only suitable ones offered were in Australia and South Africa. Messrs. Ferguson Bros., one of the largest firms building dredging and harbour plant, wrote, stating that there was not a hopper dredger of the capacity mentioned to be bought in England. Messrs. Simons & Co., also large and successful dredge builders, wrote that all their large dredges were fully employed, and that they did not think there was a possibility at that time of procuring a second-hand hopper dredger, either hydraulic or bucket ladder type.

A Dutch pump dredge, at New Orleans, was offered by Messrs. H. E. Moss & Co., of Liverpool, England, for £34,000. The price being very reasonable, on authority of Council the Minister ordered an examination with a view to purchase. The only objection to this dredge was that it had no cutter and therefore was not suitable for dredging anything but sand or soft silt. After examination it was decided to purchase it, as Messrs. Moss & Co. had reduced their offer to £30,000.

The dredge was purchased on April 20, 1906, at that price, or \$146,000, with interest to date of payment. The vessel was docked and made ready for the long voyage, and all expenses of repairs, wages, provisions, stores, etc., until the dredge reached Quebec, amounted to \$10,942.14 and \$4,574.17 insurance.

The dredge *Galveston* arrived at Quebec from New Orleans under her own steam, having been twenty-nine days on the voyage. She continued up to Sorel to be thoroughly overhauled and fitted out, additional quarters for the crew being also provided.

South Channel (30 feet at E.L.W.)—The Government having decided to first improve the south channel, preparations were made to start the work. The project had in view a channel 30 feet in depth, at extreme low tide at Beaujeu bank and St. Thomas' flats, with a width of 1,000 feet.

The changes and improvements on the dredge *Galveston* being completed, she left Sorel for Beaujeu bank, off Crane island, on August 11, 1906, and began operations on August 13. The material consisted of coarse sand and gravel, with some layers of soft blue clay. The new hopper hydraulic dredge *Beaujeu* was launched at the government shipyard at Sorel on December 2, 1906, and completed on November 1, 1907. She was then taken down to commence opera-

7 GEORGE V, A. 1917

tions on the channel through St. Thomas flats, the material to be dredged being soft clay, sand, and some stones.

With these two powerful dredges, good progress was made with the work. The Beaujeu Bank channel was completed in 1909 to 30 feet at extreme low tide, and the widening finished in 1910. The channel was then opened to navigation.

The St. Thomas channel was completed to a depth of 30 feet at extreme low tide and to a width of 1,000 feet during the season of 1912. The channel was then marked out with gas buoys and opened to navigation. This was considered a great improvement as deep-draught vessels were not obliged to anchor to wait for the tide to pass Beaujeu bank or St. Thomas flats, thereby saving much valuable time.

North Channel (35 feet at E.L.T.)—The south channel being now completed, the powerful hydraulic dredge No. 8 (*Beaujeu*) was enabled to be placed at work on the north channel where dredge No. 9 (*Galveston*) had already been operating for a season, as the Government had decided to dredge the north channel between St. Jean, island of Orleans, and Goose cape, to a depth of 35 feet at extreme low tide, and to a width of 1,000 feet.

The two powerful sea-going hydraulic dredges No. 8 and No. 9 have since then been at work in that channel, the material to be dredged being sand and gravel.

Although these two dredges have made good progress, there still remains 6,928,805 cubic yards to be removed.

Owing to requests made by the shipping interests to complete the channel as soon as possible, the Government gave a contract in October, 1914, to the Canadian Vickers, Ltd., of Montreal, to build one of the largest sea-going elevator dredges in the world. It is expected to have this dredge completed by September, 1916. With this addition to the dredging fleet below Quebec, the completion of the north channel will be greatly expedited.

BETWEEN MONTREAL AND FATHER POINT—ACCIDENTS DURING SEASON 1915.

MONTREAL TO QUEBEC.

Steamer Quebec—July 6. Canadian Lévis steamer *Quebec* was stranded 5 miles above Three Rivers. Gale drove vessel ashore on south side. Got off with no damage of any consequence.

SS. Rosemount.—July 9. Montreal transportation steamer *Rosemount* was stranded on the south shore about 2 miles above Richelieu rapids; ship apparently caught by current and carried to this position; got off with not much damage.

Steamer Prefontaine.—August 3. Steamer *Prefontaine* stranded about 1,000 feet from shore opposite the Jacques Cartier river; foggy weather; got off with only one propeller broken.

SS. Keyvive.—August 5. The Keystone Transportation Company's steamer *Keyvive* was stranded at about one and a half miles below Champlain, Que., but got off with slight damage.

C.G.S. De Levis and M.H.C. steamer Sir Hugh Allan.—August 21. The Canadian Government steamer *De Levis* and the Montreal Harbour Commissioners' steamer *Sir Hugh Allan* collided just above Champlain river, outside the ship channel on the north bank, with no damage to the *Sir Hugh Allan*, but the *De Levis* was sunk; no lives lost. Collision due to default of master of each vessel to carry out article 28 of the Rules of the Road. The *De Levis* was raised, repaired, and placed into commission again.

SESSIONAL PAPER No. 21

SS. Cascapedia.—September 15. The Quebec Steamship Company's steamer *Cascapedia* was stranded on south bank at head of lake St. Peter during dense fog; came off without any damage.

SS. Indore.—September 22. The steamer *Indore*, outward bound, when coming to anchor at the anchorage ground below Pointe Citrouille, grounded slightly on the south bank, but came off without assistance or damage.

SS. Lady of Gaspé.—October 13. The steamer *Lady of Gaspé*, owned by the Gaspé Steamship Company stranded at about one-third or half a mile east of the Quebec bridge, on the north shore of the river St. Lawrence, during fog. Bottom was damaged. Stranding was due to lack of prudence and to bad navigation on part of master.

SS. Harmatris.—November 6. The steamer *Harmatris*, loaded with supplies for the British Government, outward bound, went ashore at the upper end of Cap à la Roche channel, on the south side. The steamer came off at high tide with the assistance of a tug, slightly damaged. Accident caused by steering gear not working properly.

SS. Saint Cecilia.—November 13. The steamer *Saint Cecilia*, loaded with supplies for the British Government, outward bound, went ashore in Montreal harbour, opposite Vickers floating dock, on south side of channel. After unloading part of cargo the steamer was pulled off undamaged next day. The accident was due to the steering gear not working properly.

Most of the accidents mentioned above are of a minor nature, and none can be attributed to any fault of the ship channel.

QUEBEC TO FATHER POINT.

SS. Christine and *H.I.*.—May 18. The examination steamer *Christine* collided with the *H.I.*, bound for Montreal, resulting in the sinking of the former vessel, and the loss of six members of her crew and one signalman on board, at 7.55 p.m. at a place about half-a-mile west of the St. Jean wharf, island of Orleans. The *H.I.* was only slightly damaged. The finding of the wreck Commissioners' court was that the captain of the *Christine* was chiefly to be blamed for the accident.

SS. Strathcona.—May 29. The steam barge *Strathcona*, of the Canada Steamship Lines, stranded at White island. Got off with slight damage, and proceeded to unload part of her cargo at Riviere-du-Loup.

SS. Haddington.—June 4. The Canadian Steamship Lines' steamer *Haddington* went aground on the Eastern reef of Red island. Came off at flood tide, with partial damage to her bottom. Accident was due to the sailing master in charge not exercising proper seamanship and good judgment.

SS. Henry B. Hall.—June 10. The steam barge *Henry B. Hall* stranded one-and-a-half miles southeast of the Stone Pillars light. Smoky weather. Came off without any damage. The accident was due to carelessness and neglect on the part of the pilot.

Barge A.D..—June 23. The barge *A.D.* became water-logged in a heavy sea at Crane island owing to steam pumps getting out of order, and the hand pumps being unable to keep her afloat. The heavy gale raging at the time caused her to founder.

SS. Romney.—June 24. The steamer *Romney*, inward bound, went aground on Green island reef; was floated the same day at high water and pro-

ceeded up to Quebec. Her bottom was damaged. The accident was due to lack of attention to duty on part of pilot, who mistook Green Island light for Red Island light.

Steamer Tadoussac.—June 28. The Canadian Steamship Lines' steamer *Tadoussac* was stranded near Ste. Irenée wharf during fog. Was got off with small damage.

SS. Bengore Head and *ss. Batiscan*.—August 1. The steamer *Batiscan*, inward bound, and steamer *Bengore Head*, outward bound, collided off cape Salmon during fog. The *Bengore Head* had to be beached on Hare Island reef. The *Batiscan* also received damage, but was able to proceed on her way up. The finding of the Wreck Commissioner's court was that the *ss. Batiscan* was entirely to blame for the accident.

SS. Romera.—August 15. The steamer *Romera*, owned by the Glasgow United Shipping Company touched bottom on shoal on the north shore between cape Dogs and cape Salmon during fog. Small damage. The finding of the Wreck Commissioner's court was that the pilot was to blame for the accident.

SS. Pretorian and *ss. Kansan*.—September 15. The steamship *Pretorian* of the Allan Line collided with the steamship *Kansan*, inward bound, of the American Hawaiian Steamship Company, whilst former was at anchor at a place about a mile east of the White Island lightship during thick fog. Both steamers received some damage. The finding of the Wreck Commissioner's court was that the accident was due to lack of prudence and bad navigation on the part of the pilot.

Barque Sosteen.—September 26. The Danish barque *Sosteen* was stranded on the north side of Barnaby island about one mile from west end, the anchor cable having parted and the ship drifted ashore. Received considerable damage.

None of the above accidents which occurred between Quebec and Father Point can be attributed to the ship channel.

MARINE SIGNAL SERVICE.

Signal stations have been established for the purpose of maintaining communication between ship and shore by means of flag signals.

This system of stations extends from St. John, N.B., Halifax, N.S., Cape Race, Nfld., and Bell Isle up the gulf and river St. Lawrence and through the Great Lakes to Sault Ste. Marie, Ont.

Following is a complete list of stations:—

EAST OF QUEBEC.

Name of Station.	Location.	Nautical Miles from	Means of Communication.
Quebec	Custom House	0	Telephone.
St. Jean d'Orleans	Shore end of wharf.	14	"
Crane Island.....	Lighthouse.....	32	"
L'Islet	100 yards east of church..	49	Telegraph.
Cape Salmon.....	Lighthouse.....	81	Telephone and Telegraph
Riviere du Loup	Shore end of wharf.	92	Telegraph.
Father Point.....	Shore end of wharf.....	157	"
Little Metis.....	Lighthouse.....	175	"
Matane	"	200	"
Pointe des Monts.....	"	219	"

SESSIONAL PAPER No. 21

EAST OF QUEBEC—*Concluded.*

Name of Station.	Location.	Nautical Miles from	Means of Communication.
Cap Chat..	Lighthouse	234	Telegraph.
Riviere a la Martre	"	260	"
Cape Magdalen	"	294	"
Fame Point..	"	325	"
Cap des Rosiers ..	"	349	"
Cape d'Espoir	"	377	"
Point Maquereau ..	"	400	"
West Point, Anticosti	"	332	"
Southwest Pt., Anticosti.	"	360	"
South Point, Anticosti	"	415	"
Heath Point, Anticosti..	"	438	"
Point Escuminac, N.B.	"	462	"
Amherst Island, Magdalen Islands	"	481	"
St. Paul's Island, C.B..	Main Station..	540	Telephone
Money Point, C.B., N.S...	Lighthouse	537	"
Flat Point, N.S.....	"	575	Telegraph.
Cape Ray, Nfld....	"	553	"
Cape Race, Nfld..	"	826	"
Point Amour, Labrador.....	Lighthouse.....	673	Wireless-Telegraph.
Belle Isle..	"	734	"
Camperdown, N.S..	Near Wireless Station.	—	Telephone.
Halifax, N.S..	The Citadel	—	"
Brier Island, N.S.....	Near Lighthouse.....	—	"
Point Lepreau, N.B.....	Lighthouse.....	—	"
Partridge Island, N.B...	"	—	"
St. John, N.B.....	Custom House.....	—	"

WEST OF QUEBEC.

Bridge Station.....	$\frac{1}{2}$ mile above new railway Bridge on south shore..	6	Telephone.
St. Nicholas.....	At Tidal Semaphore.....	12	"
Portneuf.....	In front lighthouse.....	31	"
Grondines.....	In old windmill tower...	41	"
St. Jean Deschaillons	At Tidal Semaphore.....	45	"
Pointe Citrouille.....	Lighthouse.....	55	"
Three Rivers.....	Upper end of Government Wharf.....	68	"
Sorel.....	Lower end of Government wharf.....	100	"
Bellmouth.....	About 500 feet east of Con- trecoeur Lower Range Light.....	110	"
Cap St. Michel	Abreast east end Ile Des Lauriers.....	125	"
Longue Pointe.	Point between wharves....	134	"
R Montreal.....	92 Notre Dame St., East.	139	"

WEST OF MONTREAL.

		Nautical Miles from Montreal.	
R Lachine Canal..	Lock No. 2.	0	Telephone.
R Lachine Canal..	Lachine...	8	"
R Soulanges Canal.	Cascades Point	21	"
R Soulanges Canal..	Coteau Landing .	33	"
R Cornwall Canal ..	Cornwall ..	62	"
R Galops Canal.....	Lift Lock.....	99	Telegraph.
R Welland Canal.....	Port Dalhousie.....	298	"
R Welland Canal.....	Port Colborne.....	321	"
R Soo Canal.....	Sault Ste. Marie.....	820	"

7 GEORGE V, A. 1917

Stations marked thus "R" are reporting stations only and are not equipped for signalling purposes. Station marked "X" closed during the period of the war.

BRIEF SUMMARY OF WORK PERFORMED.

1. Stations report movements of vessels to Montreal, Quebec, Sydney, Halifax, or St. John.

2. Stations report weather conditions daily to Montreal, Quebec, Sydney, Halifax, or St. John.

3. Montreal, Quebec, and St. John publish daily bulletins giving weather and ice conditions and movements of vessels.

4. Montreal and Quebec publish daily bulletins showing the depth of water at various points in the river St. Lawrence ship channel.

5. The Signal Service offices at Montreal, Quebec, and St. John are open day and night for the purpose of furnishing the public with information of shipping matters.

6. The telegraph system of the Department of Public Works on the north shore of the gulf of St. Lawrence report the movements of vessels engaged in the coasting trade to the signal service at Quebec.

7. The collectors of Customs at all the seaports in the river and gulf of St. Lawrence, on the Atlantic coast and in the bay of Fundy report the arrival and departure of vessels engaged in the overseas trade.

8. Lloyd's agents at Quebec are furnished daily with full information of the movements of vessels engaged in the overseas trade to and from ports in the province of Quebec.

9. Lloyd's agents at St. John are furnished daily with full information of the movements of vessels engaged in the overseas trade to and from ports in the Maritime Provinces.

IMPROVEMENTS CARRIED OUT AND CONTEMPLATED.

The signal service at Halifax, St. John, North Sydney, and Quebec, in the river and gulf of St. Lawrence and on the Great Lakes, and the telephonic and reporting service between Quebec and Montreal were combined on the 1st April, 1914, under the heading of Signal Service, with headquarters at Quebec. This consolidation has greatly facilitated the work and has led to many improvements.

An arrangement was made with the Department of Railways and Canals whereby their officials at the Lachine, Soulanges, Cornwall, Galops, Welland, and Sault Ste. Marie canals, report several times daily to the Signal Service at Montreal, giving movements of vessels bound to Montreal and points east of that port. In this connection a private telephone line has been established between the Signal Service office, Montreal and the canal office at Lachine. This service has proved itself to be very useful, especially to the shipping interests of the port of Montreal, and will be extended from time to time as conditions may warrant.

A new signal station was established at Cap St. Michel and put in operation on the 27th July, 1915, and another just below Bellmouth curve, on the south shore; this one, however, was not ready to commence operations before the end of the season, therefore it was decided to continue the Verchères signal station for the balance of the season and then close it up for good and open the new

SESSIONAL PAPER No. 21

Bellmouth station the following spring. The old signal station building at Batisseau was towed up on a scow and utilized for the Bellmouth station, after certain alterations and repairs were made.

The signal station at Verchères was closed on the 15th December, 1915.

These new stations will improve the service considerably, giving it better facilities for showing weather conditions on the river and for reporting the movements of vessels.

The signal stations at Point Tupper, C.B., N.S., and Scatari island, N.S., are to be put in operation on the 1st April, 1916.

It has also been decided to establish a reporting station in the Mainadieu lighthouse. This station, with the one at point Tupper and at Scatari island will improve the service, enabling the weather conditions and movements of vessels to be reported in territory not previously covered by the signal service.

All the various signal stations were kept in good repair and painting done where required.

QUEBEC, Que., May 1, 1916.

ICE-BREAKING, WINTER 1915-16.

SIR,—I have the honour to submit the following report on the work of the ice-breaking steamers *Lady Grey* and *Montcalm* during the winter of 1915-16:—

On the 30th of November, 1915, the C.G.S. *Lady Grey* was sent to Three Rivers to be on hand to assist any vessels through the ice, should it be found necessary. The *Lady Grey* remained there until December 11, when she accompanied the ss. *Port Dalhousie* to Quebec, this being the last steamer out.

The *Lady Grey* then commenced her usual trips to Cap Rouge and St. Nicholas, to observe the ice conditions at these points.

The ice-breaker *Montcalm* returned from her trip to Gaspé, Anticosti island, and north shore points on January 4, 1916, and immediately was overhauled for her ice-breaking operations, and then took her turn with the *Lady Grey* to observe ice conditions at the bridge and above, when it was found advisable.

The weather was comparatively mild all through December, January, and the beginning of February. This gave very little work for the ice-breakers during this period, as they had only to occasionally widen the channel at Cap Rouge and slice off at Beauport batture.

The ice-bridge formed at Port St. Francis on December 20, and a few days afterwards it had formed solid from that point to Montreal.

A serious ice-jam occurred at Cap Rouge on February 13, the ice having stopped between the Quebec bridge piers at 10.45 a.m., and had also stopped in Quebec harbour. The ice-breakers were kept at work opposite Indian cove, in order to keep the lower part of the harbour clear of ice. Next day at 6 a.m. they began to work upwards, and by 1 p.m. had cut their way for a distance of 2 miles in broken ice, of 4 to 5 inches thickness, and piled up to a depth of 10 to 12 feet.

Owing to the tide conditions, the ice-breakers had to stop work, and at the time they stopped work the end of the ice above could not be seen. During the following night the jam gave away, and most of it passed down, and by 8.30 a.m. the remainder moved out. This jam was caused by the very severe weather which occurred at neap tides when the current was less strong. A strong north-east wind also helped to retard the ice.

A jam occurred at Quebec harbour on February 26, and another on the 27th, caused by a large piece of batture ice coming from Les Ecureuils bank, jamming at the bridge. Both these jams were easily broken up by the ice-breakers.

7 GEORGE V, A. 1917

On December 21 the *Lady Grey* made a trip to Grosse Isle with passengers and freight, and on January 21 she went down to Red island to rescue the crew of the ferry boat *Pilot* which was aground.

The *Lady Grey* made several trips during the winter to Portneuf to slice off the batture ice, and give a wider channel, to allow the ice to move down freely. The channel was kept open all winter up to Three Rivers.

It had been decided to begin breaking the ice above Three Rivers on March 20, but owing to the *Montcalm* being required to assist the ferry boat C.G.S. *Champlain* between Murray bay and Rivière Ouelle, on the 23rd, as the ice was too heavy for the *Champlain*, the *Lady Grey* only began work on the 24th, about a mile and a half above Three Rivers.

The *Montcalm* remained at Quebec in case the batture ice at Les Ecureuils and bay St. Croix might break away with the spring tides and jam at Cap Rouge.

As the ice was found very thick and progress slow, with the *Lady Grey* working alone, the *Montcalm* was ordered up on the 27th to help the *Lady Grey*, and with both vessels working together, more rapid progress was made.

From Three Rivers down to Quebec, the river was practically clear of ice from shore to shore, the only points where there was any shore-ice were at Les Ecureuils and bay Ste. Croix.

Above Three Rivers, from the point where the *Lady Grey* commenced, up to the foot of lake St. Peter, the ice was 24 to 36 inches thick, and very slow progress was made, and it was only by April 1 that this part was clear of ice up to Nicolet traverse.

The cutting of the channel and widening was pushed ahead to a short distance above curve No. 2. It was then decided not to go up farther on account of a crack in the ice about a half mile above Yamachiche bend, which went right across the lake, and it was expected that the whole of the ice below this might move bodily at any time. If this had happened there was great danger of one of the ice-breakers being caught above this point for some days.

The ice on lake St. Peter started to move on April 15 and, assisted by the constant work of the ice-breakers, the whole lake was practically clear of ice by the 19th.

Both ships proceeded next day and broke up a jam abreast of Ste. Anne de Sorel, and then worked till the 22nd breaking up a very heavy one in the vicinity of Sorel point. When this was accomplished, the river was clear of ice from Montreal to the gulf.

Owing to a very heavy formation of frazil ice at the foot of Soulanges canal, the Department of Railways and Canals applied to the Department of Marine for the services of the C.G.S. *Lady Grey* to clear the channel in order to allow vessels to pass.

The *Lady Grey* left Sorel on April 24, 1916, for Montreal, and left for lake St. Louis early next morning. The commencement of the ice was abreast of the church on Ile Perrot; the ice-breaker worked all that day and the next. On the 26th a large piece of batture ice broke away and grounded below Windmill point, blocking the channel; the *Lady Grey* worked two days breaking this up. On the 27th the *Lady Grey* had to return to Lachine for coal, which she took during the night. Next morning she returned to her work opposite Cascades island, and succeeded in clearing the channel to the foot of Soulanges canal at 4.30 p.m. that day, thereby allowing free passage to vessels.

SESSIONAL PAPER No. 21

The *Lady Grey* then proceeded down on her way to Montreal, but was detained several days at the entrance of the Lachine canal owing to repairs in the canal.

I have the honour to be, sir,
Your obedient servant,
ALPHONSE LAFLECHE,
Acting Resident Engineer.

V. W. FORNERET, Esq., C.E.,
Superintending Engineer, River St. Lawrence Ship Channel,
Department of Marine,
Ottawa, Ont.

GENERAL INFORMATION.

The New Steamboat channel for light-draught vessels and tows, through the islands opposite Sorel to lake St. Peter by way of the Grand Chenal, was completed to a depth of 15 feet at extreme low water of 1897, and to a minimum width of 400 feet.

As soon as the three lighthouses to mark the different courses are completed in the spring of 1916, the channel will be buoyed out and opened for navigation.

All light-draught vessels and tows will have to use this channel, and keep out of the ship channel. This will relieve the ship channel of these vessels and prevent them being in the way of the ocean steamers in the bends between Sorel and lake St. Peter. This new channel is practically a continuation of the Repentigny Steamboat channel. With this addition, there will be a distance of over 50 miles, between lake St. Peter and Montreal, where tows and light-draught vessels can keep out of the ship channel.

Considerable progress was made in the deepening of the ship channel to 35 feet at extreme low water of 1897 between Three Rivers and Montreal; 8 miles in length was dredged during the season.

The dredging of the 35-foot channel through lake St. Peter is nearly completed; there remains only Ile au Raisin traverse and about half a mile in Nicolet traverse to be done, which will be completed next season.

The Cap Charles Channel, at Cap à la Roche, was completed to 30 feet at extreme low water of 1897, and widened from 300 to 450 feet in the straight portion and 650 feet at the curve. A new range of lights was constructed to mark the new centre line, and permanent beacons erected to mark the bank lines. The channel was then buoyed to give the increased width, and opened to navigation.

The Grondines Channel was also completed to 30 feet at extreme low water and widened from 300 to 450 feet. A new range of lights was constructed to mark the new centre line. This channel was also buoyed to give the increased width and opened for navigation.

The widening of Cap à la Roche curve is almost completed, but there remains considerable deepening and cleaning up to be done yet. A large area of rock was also broken by the rock cutter in readiness for next season's work.

Good progress was made with the widening of the ship channel through Montreal harbour at St. Mary current and Longueuil shoal; the curve at the latter point is to be widened from 700 to 800 feet.

The dredging operations in the north channel below Quebec have been carried on vigorously, two large sea-going suction dredges being kept at work during the whole season. They removed 2,197,568 cubic yards, and there still remains 6,928,805 cubic yards to be dredged. This channel is to be 1,000 feet in width and 35 feet in depth at extreme low tide. Where there was only 7 feet

at low tide, there is now a depth of 26 feet. With the addition of the new dredge now building at Canadian Vickers, Limited, Montreal, much greater progress will be made.

The length of the 30-foot channel actually completed at the close of the season of navigation 1915, equals 66·30 statute miles. The total length requiring dredging is 70·00 miles, leaving 3·70 miles yet to be done.

The total length of the 35-foot channel completed at the end of the season of navigation 1915 equals 29·37 statute miles. The total length requiring dredging being 90·38 miles; there remains to be dredged, 61·01 miles.

A commencement was made on the construction of the compensation dams, as recommended by the commission appointed to investigate and report upon the water levels of the river St. Lawrence at and below Montreal.

In order to lessen the cost, it was decided to utilize, as much as possible, the dredging material taken from the ship channel and deposit it on the sites of the proposed dams.

Dredged material was dumped on the following sites: Repentigny (between Ile à Bague and Ile Bellegarde); Chenal Corbeaux (between Ile de Grace and Stone island); Chenal des Barques (between Ile aux Barques and Ile du Moine); Pointe du Lac, at foot of lake St. Peter.

During the season the usual sweeping of the ship channel was done, and no obstruction of a serious nature was found.

The Cap a la Roche semaphore at Deschaillons, Que., which gives the depth of water in the dredged channel was put in operation on May 1st, 1915, and St. Nicholas semaphore showing the available depth over the undredged St. Augustin bar was started on the same day.

The total cost from 1851 to the end of the fiscal year, March 31, 1916, of the ship channel, including plant, shops surveys, etc., is as follows:—

Dredging	\$12,518,963 84
Plant, shops, surveys, etc.....	7,533,387 40
	<hr/> \$20,052,351 24

The number of cubic yards dredged amounted to 105,989,842, the material varying from very hard shale rock to soft blue clay.

Average depth for each month in the 27½ foot channel (27½ feet at ordinary low water) from Sorel Gauge during each year, May to November.

Year.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Highest	Lowest
	Ft. in.	Ft. in.	Ft. in.	Ft. in.	Ft. in.	Ft. in.	Ft. in.	Ft. in.	Ft. in.
1890 .	35 6	35 3	31 9	30 6	30 9	29 9	30 6	37 0	29 0
1891 .	34 6	31 3	29 9	29 9	30 0	28 3	28 3	36 9	27 3
1892 .	31 0	31 9	31 6	30 6	28 9	28 3	28 3	33 6	27 3
1893.....	36 0	34 3	30 9	29 9	29 6	28 6	28 0	37 6	27 6
1894 .	34 6	31 9	31 0	29 2	28 3	28 9	29 0	36 0	27 7
1895 ...	33 3	31 3	28 3	28 3	27 6	26 9	26 9	34 6	25 10
1896 ..	33 6	30 6	28 9	28 0	27 6	27 9	29 0	37 0	27 4
1897 .	35 6	32 6	30 3	29 3	28 0	27 0	27 6	37 0	26 5
1898 .	31 6	30 9	29 8	28 2	28 2	28 3	28 6	32 1	26 9
1899 .	36 2	31 9	30 3	28 6	27 6	28 0	27 9	37 9	26 9
1900 .	33 6	30 9	30 6	29 6	28 1	28 9	29 2	35 9	27 4
1901..	34 3	31 10	29 2	28 3	27 7	27 4	27 3	36 3	26 6
1902 ..	32 2	32 2	32 2	29 4	28 1	28 1	29 0	34 1	27 6
1903..	33 0	30 11	30 5	29 5	28 4	29 0	27 11	32 8	26 11
1904 .	36 3	34 5	30 9	29 5	29 5	30 4	29 3	37 4	28 1
1905 ..	31 10	30 8	29 7	29 0	28 0	28 5	28 1	33 6	27 1
1906..	32 4	31 5	29 3	27 11	27 3	27 4	27 6	33 3	26 9

SESSIONAL PAPER No. 21

Average depth for each month in the 30 foot channel (30 feet at extreme low water of 1897).

1907	31 1	35 9	34 3	32 10	32 4	32 9	33 7	38 3	31 10
1908	41 5	37 10	33 10	32 10	32 0	31 9	30 6	12 4	30 0
1909	40 6	37 6	33 10	33 2	32 7	32 4	31 6	42 7	30 11
1910	35 7	34 5	32 3	31 7	31 6	31 6	31 7	37 1	30 7
1911	36 6	34 6	22 1	21 3	30 9	30 2	30 2	38 1	29 4
1912	37 9	37 6	33 6	32 8	32 6	32 6	31 9	40 11	31 3
1913	37 0	34 4	32 8	31 10	31 6	32 1	32 7	38 6	31 1
1914	35 2	33 0	32 4	31 1	31 3	30 11	31 0	36 10	30 3
1915	34 7	32 6	31 6	31 1	31 1	30 11	30 8	37 4	30 1

COST OF SHIP CHANNEL TO DATE—TABLE SHOWING THE TOTAL COST OF THE DREDGING AND PLANT AND THE QUANTITIES DREDGED TO MARCH 31, 1916.

	Cost of Dredging.	Expenditure for plant, shops, surveys, etc.	Quantities Dredged.
	\$ cts.	\$ cts.	Cu. Yds.
MONTREAL HARBOUR COMMISSIONERS, 1851 to 1888.			
Dredging Montreal to Cap la Roche to 27½ feet at O.L.W., and from Cap la Roche to Quebec to 27½ feet at half-tide.....	3,402,494 35	534,809 65	19,865,693
DEPARTMENT OF PUBLIC WORKS.			
Dredging, consisting of widening and cleaning up of channel, deepening Cap la Roche to Cap Charles to 27½ ft. at O.L.W. and dredging at Grondines, Lotbiniere and Ste. Croix, 1889 to June 30, 1899...	829,583 08	486,971 79	3,558,733
PROJECT OF 1899.			
Dredging channel between Montreal and Quebec to 30 feet at lowest water of 1897, also widening to a minimum width of 450 feet and straightening.			
Fiscal Year, 1899-1900.....	100,191 01	265,270 78	1,107,894
" 1900-1901.....	136,680 83	287,040 04	2,479,385
" 1901-1902.....	185,429 80	479,731 47	3,098,350
" 1902-1903.....	255,776 55	277,703 50	6,544,605
" 1903-1904.....	276,958 59	308,765 44	4,619,260
DEPARTMENT OF MARINE AND FISHERIES. This includes the work below Quebec.			
Fiscal Year, 1904-1905.....	311,087 93	277,225 69	2,716,220
" 1905-1906.....	431,768 30	317,327 37	4,047,530
" 1906-1907.....	302,677 37	275,003 61	3,001,010
(July 1, 1906 to March 31, 1907).			
Fiscal Year, 1907-1908.....	478,209 66	417,390 22	4,831,875
" 1908-1909.....	497,686 03	340,861 86	5,896,737
" 1909-1910.....	572,950 71	321,375 80	6,354,285
" 1910-1911.....	576,838 02	488,248 88	5,600,050
" 1911-1912.....	588,697 60	499,799 58	4,509,904
" 1912-1913.....	663,229 74	430,107 86	6,929,344
" 1913-1914.....	895,235 59	426,018 12	6,140,867
" 1914-1915.....	1,036,846 65	327,975 71	6,225,143
" 1915-1916.....	976,622 03	771,760 03	8,462,957
	\$12,518,963 84	\$7,533,387 40	\$105,989,842

DREDGES.

Elevator Dredge No. 1 (Laval).—This is the oldest dredge belonging to the ship channel fleet. The hull is of wood, and was constructed at Ottawa in 1894. The buckets are cast steel, designed for work in rock or other hard material.

During the winter of 1914-15, general repairs to the hull were made. The machinery was given a general overhauling and put in good condition for the next season's work. The details of the operations of this dredge for the fiscal year beginning April, 1915, were as follows:—

Dredge *No. 1* left Sorel for Montreal on May 4, where she was laid out in St. Mary current, Montreal harbour, to widen and deepen the ship channel to 30 feet at extreme low water of 1897.

The progress was slow owing to the large number of boulders that had to be lifted out of the dredge's cut, necessitating the frequent use of a stone-lifter. The material to be removed consisted of stones, gravel, and many boulders.

No. 1 was kept working in St. Mary current until November 22, when she was taken down to Sorel to go into winter quarters.

She was at work for a total of 169 days, and her machinery was in operation 67 per cent of the full working time.

The total number of cubic yards removed amounted to 79,472, at a total cost of \$62,431.45 or 78.56 cents per cubic yard.

Elevator Dredge No. 2.—The hull of this dredge is of wood and was constructed at the government shipyard, Sorel, Que., in 1897.

Dredge *No. 2* is equipped with a set of cast-steel buckets specially designed for rock and other hard material.

During the winter of 1914-15, the following repairs were made: One new upper tumbler and one new lower tumbler shaft and bush, and two new rollers on ladder frame were supplied; the bottoms of chutes were renewed; general repairs made to deck and deck houses, hull and deck work; outside and inside were painted; and other sundry repairs made. The main engine and deck winches were overhauled, etc., also general overhauling of dynamo and electric installation. The boilers had a few minor repairs done to them.

The details of the operations of this dredge for the fiscal year beginning April 1, 1915, are as follows:—

Dredge *No. 2* left Sorel on April 19, 1915, for Varennes curve to commence the season's work, where she was laid out to deepen the channel to 35 feet at E.L.W. *No. 2* remained in operation at this point until June 11, when she was towed down to be laid out to work in the ship channel at Stone island to dredge to 35 feet at E.L.W. On July 2, the dredge was towed down to Grondines, where she was laid out to clean up lumps found in the channel by the sweeping scow, after the dredges had completed dredging it to 30 feet at E.L.W.

This work was finished on October 4, the dredge was then moved up to do more cleaning up in the Cap Charles channel to 30 feet at E.L.W. This was very slow work owing to the numerous boulders which had to be lifted with a stone-lifter. *No. 2* continued cleaning up in Cap Charles channel until November 2, when she was towed up to Pointe aux Trembles channel to dredge to 35 feet at E.L.W., and remained there in operation till November 25, when the dredge was taken down to Sorel to go into winter quarters.

In a total of 187 days during which *No. 2* was at work, her machinery was in operation, 58 per cent of the full working time. The total number of cubic yards removed amounted to 169,596, at a cost of \$52,641.90, or 31.04 cents per cubic yard.

SESSIONAL PAPER No. 21

Elevator Dredge No. 3 (Aberdeen).—The hull of this dredge is of steel, the complete vessel having been constructed at the Sorel shipyard in 1900. The buckets are of cast-steel and designed for rock or any other hard material.

During the winter of 1914-15 a general overhauling of her hull and machinery was made; a new upper tumbler was installed, two smokestacks renewed, and four O'Neil's patent boiler furnace doors fitted.

The details of the operations of this dredge for the fiscal year beginning April 1, 1915, were as follows:—

Dredge No. 3 left Sorel on April 20 for Pointe aux Trembles channel where she was laid out to work at different points in this channel till July 16, deepening the channel to 35 feet at E.L.W., the material removed being clay and stone. The dredge was then moved up and laid out on the upper end of Longue Pointe Traverse to clean up some lumps found with the testing scow, and at the same time deepening the channel to 35 feet at E.L.W.

On September 9, No. 3 left Longue Pointe for Nicolet Traverse where she was laid out at the lower end to widen the channel and deepen it to 35 feet at E.L.W., the material dredged being clay. The dredge continued working there until October 21, when she was towed up to Pointe aux Trembles and laid out to dredge the portion of the channel that had been left in order to allow the King Edward Park Company time to lift the electric power cable which crossed the channel a short distance above Pointe aux Trembles village.

On November 25, having finished her cut, No. 3 was taken down to Sorel to go into winter quarters.

The working time of dredge No. 3 was 180 days, the dredge being in actual operation 64 per cent of the full working time.

The total number of cubic yards removed amounted to 155,453 at a cost of \$58,182.72 or 37.43 cents per cubic yard.

Elevator Dredge No. 4 (Minto).—This dredge is of the same type and design as No. 3 and was constructed at the Sorel shipyard in 1900. No. 4 is also provided with cast-steel buckets for dredging in rock or other hard material.

During the winter of 1914-15, this dredge received repairs and general overhauling to her hull and machinery. A new top tumbler was installed and four O'Neil's patent boiler furnace doors fitted. The details of the operations of this dredge for the fiscal year beginning April 1, 1915, were as follows:—

On April 20, 1915, No. 4 left Sorel for Pointe aux Trembles (*en haut*), where she was laid out to deepen the channel to 35 feet at E.L.W., the material removed being clay. She continued working here until August 17, when the dredge was towed down to Stone island and laid out opposite the site of the old lighthouse to deepen the channel to 35 feet at E.L.W., the material, which consisted of clay, was deposited on the line of the proposed dam between Ile du Moine and Ile de Barque.

No. 4 worked at Stone island until November 26, when she was taken to Sorel to go into winter quarters.

The number of days that this dredge was in operation was 185, and the percentage of time of actual work, 69.

The total number of cubic yards removed amounted to 389,800 at a cost of \$56,742.23 or 14.55 cents per cubic yard.

Elevator Dredge No. 5 (Lafontaine).—This dredge was also constructed at the Sorel shipyard, and was completed in 1901. She was fitted out with cast-steel baskets for rock and other hard material. The hull is of wood.

During the winter of 1914-15 a general overhauling was given the hull and machinery in order to put the dredge in first-class condition for next season's work.

7 GEORGE V, A. 1917

The details of the operations of this dredge for the fiscal year beginning April 1, 1915, were as follows:—

On April 19, dredge *No. 5* was towed up to Varennes curve and laid out to deepen the channel to 35 feet at E.L.W., the material dredged being clay. *No. 5* remained working at this point until June 5, when she was taken down to work at Cap à la Roche, being placed in position on June 7 to widen and deepen the curve to 30 feet at E.L.W., the material being solid shale rock, with numerous boulders; these had to be removed with the aid of a stone-lifter, which was slow work. Dredge *No. 5* continued working at Cap à la Roche until November 3, when she was towed up to Varennes and laid out on the curve where she had left off in the spring.

On November 25 the dredge was taken down to Sorel to go into winter quarters.

The working time of dredge *No. 5* was 186 days. She was in actual operation 49 per cent of the full working time.

The total number of cubic yards removed amounted to 184,152 at a total cost of \$64,177.89, or 34.85 cents per cubic yard.

Elevator Dredge No. 6 (Baldwin).—This dredge was built at the Sorel shipyard in 1902, the hull being of wood. *No. 6* is provided with large built-up buckets for working in soft material, but with sufficient teeth to enable the dredge to work in hard clay if necessary.

During the winter of 1914-15 considerable repairs were made to the hull, and general overhauling.

The machinery was given a general overhauling and both boilers were repaired. One complete set of New England roller grates was installed on board.

The details of the operations of this dredge for the fiscal year beginning April 1, 1915, were as follows:—

Dredge *No. 6* left Sorel on April 27, and was laid out to work at the upper entrance of the new steamboat channel through the Grand Chenal, dredging to 15 feet at extreme low water of 1897, and widening to 400 feet, the material being soft clay. *No. 6* finished cut on May 14. On May 17 she was towed up to Montreal harbour and laid out to work on the south side of the channel at Longueuil shoal, widening and deepening to 30 feet at E.L.W., the material being hard clay and stones. The dredge continued working at this point until June 29, when she was taken down to Champlain and started to clean up sand bars found in the Champlain channel by the sounding scow. This work was completed on September 21.

Dredge *No. 6* was then towed up to Ile au Raisin traverse, lake St. Peter, and laid out to clean up sand bars found by the sounding scow. She commenced work on the 24th and continued there until October 15, she was then taken up to Sorel for repairs to the upper tumbler.

On October 20, the repairs being completed, *No. 6* was taken up to Varennes and laid out to work on the upper end of the curve, deepening the channel to 35 feet at E.L.W., the material being clay.

The cut being finished on November 5, the dredge was moved up to finish the season at the lower end of Pointe aux Trembles channel, on the south half, deepening to 35 feet at E.L.W., the material removed being clay and stones. On November 16, having finished her cut, dredge *No. 6* was taken down to Sorel on the 17th to go into winter quarters.

During the season of 1915, out of a possible number of 167 days, the dredge was in actual operation 46 per cent of that time. The total number of cubic yards removed amounted to 160,675 at a cost of \$56,264.46, or 35.02 cents per cubic yard.

SESSIONAL PAPER No. 21

Hydraulic Dredge No. 7 (J. Israel Tarte).—Dredge No. 7 was constructed in 1902 by the Polson Iron-works Company of Toronto, Canada. The hull is of steel, of the same type and general design as the steel hulls of elevator dredges No. 3 and No. 4.

During the winter of 1914-15, general overhauling was given to the hull, overhauling and repairs to main hoisting winch were made, breasting and bow winches, cutter-head engine, and inside sheathing and cover of main centrifugal pump renewed. Alteration of the piping of the forced-draught fans, repairs and electric welding on furnaces of boilers, repairs to smoke-boxes, and installation of one new smokestack. General overhauling of electric wires and dynamo done, and syphons overhauled and increased in number.

The details of the operations of this dredge for the fiscal year beginning April 1, 1915, were as follows:—

On April 29, dredge No. 7 left Sorel in tow for curve No. 2, lake St. Peter, where she was laid out at the lower end of the curve to deepen the channel to 35 feet at E.L.W. of 1897, and continued working on curve No. 2, until July 27, when the dredge finished her cut at the upper end of the curve, where the deepening to 35 feet between curve No. 2 and No. 1 commenced.

The dredge lost considerable time due to lack of steam, and the question of renewing her boilers will soon have to be taken up as they are getting into very bad condition.

As dredge No. 7 was in need of certain repairs to her hull, and new sea-cocks to be put in, it was decided to take her up to Montreal and place her in the Canadian Vickers floating dock, before laying No. 7 out again at Contrecoeur, in the Contrecoeur course, where it was now the intention to put her at work.

After the pontoons and discharge pipe had been disconnected and placed in Chenal au Corbeaux for safety, No. 7 left for Montreal in tow of tugs *Frontenac* and *Lotbiniere* on July 29. The dredge entered the floating dock on July 30 and came out on August 5, and was immediately towed down to Contrecoeur, and placed in position on August 6 at the lower end of Contrecoeur course to deepen the channel to 35 feet at E.L.W. of 1897.

The pontoons and discharge pipe were brought up and all connections were completed, the dredge was ready to commence operations on August 9.

Dredge No. 7 worked until September 13, when the cutter-head shaft broke, necessitating the stopping of the dredge for several days, while it was being repaired at the Sorel shipyard shops.

The repairs being completed, No. 7 began dredging again on September 22 and continued until November 20, when, owing to the boilers leaking so badly, it was decided to stop operations and clean up before taking the dredge to Sorel to go into winter quarters. On November 25, No. 7 was towed down to Sorel.

In a total of 156 days during which this dredge was at work, her machinery was in actual operation 54 per cent of the full working time.

The total number of cubic yards removed amounted to 1,590,805 at a cost of \$118,221.08, or 7.43 cents per cubic yard.

Hopper Sea-going Hydraulic Dredge No. 8 (Beaujeu).—Steel hull, twin screw. This dredge was built at the Sorel shipyard in 1906.

During the winter of 1914-15 the wooden fenders on ship's side were partially removed, upper deck repaired and caulked and inside repainted, and sundry repairs made.

The machinery was given a good overhauling; the large gear-wheel of windlass was renewed. The turbine shell plates inside were welded by electricity, the turbine shaft, leg bush, thrust collars and turbine suction-pipe were all overhauled and repaired. One new cutter-head shaft was supplied, and new plates fitted to cutter-head. Alterations were also made to the operating levers of

7 GEORGE V, A. 1917

the gate valves. Centre furnace of both boilers was repaired and welded, stay bolts and combustion chamber made water-tight, and a few tubes packed. Also air, feed, and hydraulic pumps repaired. General overhauling of auxiliaries and of electric wiring and dynamo.

The details of the operations of this dredge for the fiscal year beginning April 1, 1915, were as follows:—

Dredge *No. 8* left Sorel for Quebec on April 19, arriving there the same day. Had to go into outside basin, to get boilers covered with asbestos and have repairs done to the rudder. When the work was done *No. 8* left Quebec on April 23 and began dredging at West Sand, north channel, the same day, where she continued working on the north channel to obtain a depth of 35 feet at extreme low tide, and a width of 1,000 feet.

On July 14 the dredge left for Montreal to enter Canadian Vickers floating dock, to get repairs done to her dumping doors, as some of the shafts were bent. *No. 8* had to be assisted by the C.G.S. *Lady Grey*, as her steering gear was out of order. The dredge entered the floating dock on the 16th. On the 20th, the repairs being completed, *No. 8* came out of dock and after taking coal continued down to West Sand, north channel, below Quebec, where she had left off, reaching there at 2 a.m. next day.

The dredge worked at West Sand until July 22, and then moved down to east narrows, north channel. On the 24th, *No. 8* had to be beached at St. Michel, to repair one of the dumping doors. The repairs being finished, the dredge left St. Michel on the 26th, and returned to her work at east narrows.

She continued working until August 25, when it was necessary to take the dredge to Quebec, to have the turbine discharge chutes repaired, the cutter-head shaft being renewed at the same time.

The repairs being done, *No. 8* left Quebec on August 27, for east narrows. On September 13 a bad break occurred to the cutter-head hoisting engine. *No. 8* went up to Quebec and tied up at the King's wharf while the broken pieces were sent to the Sorel shops to be repaired. Machinists and boilermakers from the Quebec agency worked on board during this time making repairs. Repairs being finished, *No. 8* left for east narrows on September 19.

On Saturday, October 9, the dredge had to go again to St. Michel to be beached for repairs to her dumping doors, but was back at work on Monday the 11th.

The new self-propelling hopper barge *No. 2* was brought down on October 13 and loaded from *No. 8* to test her hopper doors.

Dredge *No. 8* continued working at east narrows until November 24, and left for Sorel to go into winter quarters next day, reaching Sorel on the 27th.

In a total of 173 days during which this dredge was at work, her machinery was in actual operation 85 per cent of the full working time.

The total number of cubic yards removed amounted to 1,515,568 at a cost of \$84,230.11, or 5.56 cents per cubic yard.

Sea-going Suction Hopper Dredge No. 9 (Galveston).—Steel hull, twin screw. This dredge was purchased from Messrs. H. E. Moss & Company, of Liverpool, England, in 1906.

During the winter of 1914-15 the *Galveston* wintered in the drydock at St. Joseph, de Levis, where extensive repairs were made to her hull and dumping doors. The bow winch was given a general overhauling and the supports strengthened. Apart from the above, the following were supplied by the Sorel shipyard: new tail shafts fitted, new bushes, turbine wheels made with blades cast solid, front and cover of condenser 4-foot diameter renewed, and eccentric shafts of main engine re-babbitted with metal supplied by the shipyard. Two

SESSIONAL PAPER No. 21

intermediate slide valves and seats were renewed, and one cast-iron left-hand propeller supplied.

The details of the operations of this dredge for the fiscal year beginning April 1, 1915, were as follows:—

Repairs being all finished, dredge *No. 9* left St. Joseph de Levis on April 23 to commence dredging operations at West Sand, north channel, where she continued working until August 10, the material removed being sand, gravel, and stones. *No. 9* then moved down to east narrows and worked there.

On September 10 the main engines were found to be so much out of order that it was decided, in order to save time, to send the dredge to the Sorel shipyard for the necessary repairs. She left at 1.30 p.m. for Sorel, assisted by the C.G.S. *Bellechasse*, reaching Sorel at 4.45 p.m. next day. The repairs to the main engines being finished at 6 p.m., October 1, the dredge left for east narrows at 4 a.m. next day, arriving there at 11 p.m. that same day.

Owing to a break in the suction pipe on October 12, it was found necessary to proceed up to Quebec to have the repairs done. These being completed the dredge returned to east narrows on the 13th.

No. 9 was beached at St. Michel on October 14 as the slide of the suction pipe was damaged and would not work. Left St. Michel on October 17 for St. Patrick hole to take coal from coal barge *No. 5* and returned to the dredging station that afternoon.

On November 19, on account of strong northeast gale, *No. 9* went up to anchor at St. Patrick hole to wait till the storm moderated in order to beach the dredge at St. Michel to plug up the suction pipe hole on the starboard side of the dredge, as she was going into winter quarters. This was done on the 20th, and the dredge then proceeded to Sorel, reaching there next day.

The working time of dredge *No. 9* was 158 days; she was in actual operation 73 per cent of the full working time.

The total number of cubic yards removed amounted to 682,000 at a cost of \$69,396.55, or 10.17 cents per cubic yard.

Dipper Dredge No. 10.—Steel hull. This dredge was constructed at the government shipyard at Sorel, Que., and completed in 1910.

During the winter of 1914-15 the fenders of hull, the boiler tubes, and doors were repaired; one new smokestack was installed; repairs to piston rods and links of main engines were made, new plates with fibre for compression-box of dipper arm, all other auxiliaries, such as capstan, engine, swinging engine, etc., were overhauled and repaired, hull and deck work outside and inside repainted and sundry repair-work done.

The details of the operations of this dredge for the fiscal year beginning April 1, 1915, were as follows:—

Dredge *No. 10* began working in Sorel harbour, May 3, cleaning up in front of the government shipyard docks. On May 20, having completed the work, *No. 10* was towed up to Pointe aux Trembles to assist in lifting large dumping scow, belonging to dredge *No. 13*, which was sunk last autumn. On June 10, the work of lifting the scow being completed, the dredge was taken down and laid out to widen the Repentigny Traverse channel at Ile à la Bague, deepening to 15 feet at E.L.W. of 1897, and widening from 300 feet to 450 feet.

On June 25, the lower sheave of port bow spud broke, and it was necessary to bring down the floating crane from Montreal to lift the spud and place it on a scow, to be taken down to Sorel for repairs. Repairs being completed, the floating crane was again brought down to put back the spud. The dredge began work again on July 7, and continued working in this locality till August 18, when the cut was finished. On August 26, *No. 10* was moved to the head of

7 GEORGE V, A. 1917

Ile Deslauriers to commence straightening Cap St. Michel curve on the north bank.

In the interval between the above dates, the time was occupied in changing the short for the long dipper arm and other repairs.

On August 27, the dipper arm was broken and had to be replaced by the short one, the long one being taken down to Sorel for repairs.

The large gear-wheel of the main engine broke on September 30, and it was October 9 before it was in order again. Lost time during the month with the stern spud hoisting wire breaking a couple of times.

On November 1 the services of the floating crane were required again, to lift the stern spud out to put in a new sheave, so it was decided to take *No. 10* up to Racine pier and get the work done there in order to save time. The repairs being completed on *No. 10*, the dredge was taken down to work again where she left off at Ile Deslauriers. One of the bow spud keepers broke on the 10th.

On November 13 it was decided to take the dredge to Sorel to go into winter quarters. During the season of 1915 the working time of dredge *No. 10* was 110 days. She was in actual operation 60 per cent of the full working time.

The number of cubic yards removed amounted to 295,500 at a cost of \$52,998.89, or 17.93 cents per cubic yard.

Dipper Dredge No. 11.—This dredge was constructed at the Government shipyard at Sorel, Que., and completed in 1911. Steel hull.

During the winter of 1914-15 the main hoisting swinging engines were overhauled and repaired, the capstan winch, main friction and hand brake, bands on hoisting drum were repaired, all valves and pistons readjusted, upper were re-riveted, and a ventilator fitted over galley. Two new high-pressure pistons were renewed, condensers had six tubes removed and plugged, main stop valve on boiler repaired. General overhauling of auxiliaries, engine, boiler, and electric wiring, and repairs to hull, fenders, etc., and the hull and deck, outside and inside, repainted.

The details of the operations of this dredge during the fiscal year beginning April 1, 1915, are as follows:—

Dredge *No. 11* left Sorel on May 4, towed by the C.G.S. *Frontenac* and tug *Deschaillons*, arriving at Montreal the same day.

No. 11 was placed in position next day and the dredge got ready for work; she was laid out to widen the Longueuil curve on the north side of the channel. It is proposed to widen this channel to 800 feet, the material being hard-pan and stones. Lost considerable time waiting for scows, as the derricks were not able to empty the flat scows fast enough, and also on account of the long distance the dumping scows had to be towed to the dumping ground.

Dredge *No. 11* was in operation till August 28, when the stern spud hoisting wire broke, which necessitated the services of the harbour floating crane. The repairs being completed on the 1st September, the dredge continued operations until November 23, when she was prepared to be towed to Sorel to go into winter quarters.

Left Montreal for Sorel on November 24, towed by the C.G.S. *Frontenac* and tug *Deschaillons*. Arrived at Sorel at 5.15 p.m.

The working time of dredge *No. 11* was 171 days, the dredge being in actual operation 52 per cent of the full working time.

The total number of cubic yards removed amounted to 410,900 at a cost of \$61,842.08, or 15.05 cents per cubic yard.

Elevator Dredge No. 12.—This dredge was constructed at the Sorel shipyard and was completed in 1912. Her hull is of steel.

SESSIONAL PAPER No. 21

No. 12 is fitted out with large cast-steel buckets for rock work, and can dredge to a depth of 52 feet. The breasting winches are similar to those on elevator dredge *No. 5*, using wire cables instead of chains.

During the winter of 1914-15 the bottom of the dredge chute was sheathed with cast-steel slabs. The awning over the upper deck was replaced by wooden panels, the railings and derrick were repaired.

Repairs to the tumbler shafts were made, and general overhauling of main engines and winches was made; hull and deck outside and inside painted, and sundry other repairs carried out.

The details of the operations for the fiscal year beginning April 1, 1915, are as follows:—

Dredge *No. 12* left Sorel April 22 for Pointe aux Trembles, and was laid out next day to deepen the channel to 35 feet at E.L.W. Lost considerable time replacing bad links in bucket chain.

On May 27 the dredge was taken down to Sorel to have repairs done to her bucket chain. These being completed on June 3, *No. 12* was taken down to the foot of Ile de Grace channel and laid out to deepen the channel to 35 feet at E.L.W. and continued dredging in this locality till June 14, when *No. 12* was towed down to Cap à la Roche and laid out next day at the foot of Cap Charles channel on south side, dredging to 30 feet at E.L.W. of 1897, material being solid shale rock. Having finished her cut on July 21 the dredge was dropped back to clean up obstructions found with the testing scow. A great deal of stoning with a stone-lifter had to be done while cleaning up, which made progress slow.

On October 12, *No. 12* having completed cleaning up, she was taken up to St. Ours traverse, Contrecoeur channel, and laid out at the lower end of the curve to widen, and deepen to 35 feet at E.L.W., the material being clay and small stones.

She continued working there until taken to Sorel on November 24 to go into winter quarters.

The working time of dredge *No. 12* was 153 days, the dredge being in actual operation 62 per cent of the full working time.

The total number of cubic yards removed amounted to 198,786 at a cost of \$56,745.01, or 28.54 cents per cubic yard.

Elevator Dredge No. 13.—This dredge was constructed at the government shipyard at Sorel, Que., and was completed in 1913. Her hull is of steel.

No. 13 is fitted out with large cast-steel buckets for rock work, and can dredge to a depth of 52 feet. The breasting winches are similar to those on elevator dredge *No. 12*, using wire cables instead of chains.

During the winter of 1914-15 the ladder frame mud guards were repaired. Top plates of frame under rollers were cut with the electric machine; rooms aft repaired and put in good order; cotton deck awning on upper deck replaced by wooden panels; three valves of reversing engines repaired; one broken gear renewed in bow winch and the bucket frame winch had a wheel renewed and all auxiliary machines were overhauled.

The boilers had the butt straps caulked, and doors repaired, and four cross-bars renewed. The derrick on main deck was repaired. The hull and deck work outside and inside was repainted and sundry repair work carried out.

The details of the operations of this dredge for the fiscal year beginning April 1, 1915, were as follows:—

Dredge *No. 13* left Sorel on April 22 and was laid out to work on Ste. Anne Traverse to deepen the channel to 35 feet at E.L.W. of 1897. Having finished her cut on June 17, the dredge was moved down to work on the north half of Ile de Grace channel to dredge to 35 feet at E.L.W., the material being soft

7 GEORGE V, A. 1917

clay. The dredged material was utilized in making the foundation of the compensation dams in Ile du Moine channel and Chenal Corbeaux. Having completed her cut on October 19, *No. 13* was moved to the lower end of Ile de Grace channel, where *No. 12* had left off in the spring.

Dredge *No. 13* continued working here until November 26, when she was taken to Sorel to go into winter quarters.

The working time of dredge *No. 13* was 186 days, during which the dredge was in actual operation 60 per cent of the full working time.

The total number of cubic yards removed amounted to 791,450 at a cost of \$61,898.27, or 7.82 cents per cubic yard.

Self-propelling Elevator Dredge No. 14.—Steel hull; single-screw; length between perpendiculars, 215 feet 0 inches; breadth, moulded, 37 feet 5 inches; depth, moulded, 14 feet, 0 inches; mean draught, 9 feet 8 inches; speed, 8 knots; greatest working depth, 55 feet; built by the Collingwood Shipbuilding Co. in 1914. Steel buckets 1 cubic yard capacity; working capacity, per hour in clay, 800 cubic yards.

During the winter of 1914-15 the bucket frame had holes cut in the plates under the rollers in order to prevent stones jamming. One of the chutes was strengthened by doubling plates and channels.

The upper deck aft was caulked all over. The lower tumbler-bush was repaired and put in good order.

The main throttle-valve and the thrust of bucket frame winch were repaired. New frictions to bow breasting-winch, both bilge pumps repaired, valve seat and rings renewed, new brasses to lower tumbler were supplied. One large skylight was made on each side of engine room casing. Alterations to heating system in bath-room and officers' quarters were made. General overhauling of piping and drains and other auxiliaries. The hull and deck-work were repainted, and sundry repairs were carried out. Some of the rivets were renewed on the boilers, and some caulking done.

The details of the operations of this dredge for the fiscal year beginning April 1, 1915, were as follows:—

Dredge *No. 14* left Sorel on April 28, and was taken up to St. Ours traverse (Contrecoeur channel) and was laid out to work in the channel to deepen to 35 feet at E.L.W. Having finished her cut on June 15, *No. 14* steamed down to Sorel to get repairs done to her lower tumbler, and change a cracked bucket. She returned to St. Ours traverse on June 21, and was laid out to work on the south half of the channel. *No. 14* continued to work on the south half of Bellmouth curve after the south half of St. Ours traverse was finished, but was obliged to stop on August 19, owing to the lack of water on the banks to lay out the breasting anchors.

No. 14 went down that same day and was laid out on the south side to widen the curve at the foot of St. Ours traverse, the material being clay and small stones. She continued in operation here until September 20, when she went down to Sorel for repairs to the upper tumbler.

The repairs being finished, *No. 14* left Sorel on September 22, and went up to Verchères and was laid out to work on the north half of the channel between Verchères and Cap St. Michel at the lower end, to dredge to 35 feet at E.L.W., the material being clay. Considerable time was lost during the season owing to trouble with the dumping scows. On November 20, dredge *No. 14* picked up her anchors and went down to Sorel to go into winter quarters.

The working time of dredge *No. 14* was 168 days, the dredge being in actual operation 66 per cent of the full working time.

The total number of cubic yards removed amounted to 884,400 at a cost of \$63,614.38, or 7.19 cents per cubic yard.

SESSIONAL PAPER No. 21

Self-propelling Elevator Dredge No. 15.—Steel hull; single screw; length between perpendiculars, 215 feet 0 inches; breadth, moulded, 37 feet 5 inches; depth, moulded, 14 feet 0 inches; mean draught, 9 feet 8 inches; speed, 8 knots; greatest working depth, 55 feet; built by the Collingwood Shipbuilding Company in 1914; steel buckets, 1 cubic yard capacity; working capacity per hour in clay, 800 cubic yards.

During the winter of 1914-15, the bridge deck opposite wheel-house was cut and the telegraph shifted to give clearance to the buckets. One large skylight was installed on each side of the engine-room casing.

The thrust of the ladder-frame winch was strengthened. The bearing of the upper main shaft was repaired; one breasting winch frame repaired, and a general overhauling of dynamo engine and repairs to armature. Also new brass rings to feed pump pistons, renewal of glands of rods, and piston rods of main engine.

Alterations were made to the heating system in bath room and officers' quarters. General overhauling of piping and drains, and other auxiliaries.

The hull and deck-work was repainted and sundry repairs carried out.

The details of this dredge's operations during the fiscal year beginning April 1, 1915, were as follows:—

Dredge *No. 15* left Sorel on April 27 for St. Ours traverse (Contrecoeur channel), and was laid out to deepen the channel to 35 feet at extreme low water of 1897. She continued working there until the dredge cut was finished. On September 4, work on repairs to the upper tumbler was begun, but it was found that it would be a saving of time to take the dredge to Sorel, so *No. 15* went down on the 8th. The necessary repairs being completed on September 14, *No. 15* left Sorel for Verchères and was laid out to work on the north half of the channel between Verchères and Cap St. Michel, deepening to 35 feet at E.L.W., of 1897.

Considerable time was lost during the season owing to trouble with the dumping scows. Dredge *No. 15* continued in operation here until November 23, and then steamed down to Sorel to go into winter quarters.

The working time of dredge *No. 15* was 172 days, the dredge being in actual operation 57 per cent of the full working time.

The total number of cubic yards removed amounted to 954,400 at a cost of \$57,235.01, or 5.99 cents per cubic yard.

The total number of cubic yards removed by the dredging fleet in the ship channel between Montreal and Quebec during the fiscal year ending March 31, 1916, amounted to 6,265,389 at a total cost of \$822,995.37, or 13.14 cents per cubic yard.

The total number of cubic yards removed by dredges *No. 8* (Beaujeu) and *No. 9* (Galveston) in the ship channel below Quebec, during the fiscal year ending March 31, 1916, amounted to 2,197,568, at a total cost of \$153,626.66, or 6.99 cents per cubic yard.

The total number of cubic yards removed by the whole of the dredging fleet during the fiscal year ending March 31, 1916, amounted to 8,462,957, at a total cost of \$976,622.03, or 11.54 cents per cubic yard.

7 GEORGE V, A. 1917

PROGRESS of Dredging Operations at date of writing, the close of the Season.
1915, 30-foot project.

Locality.	Distance, English miles.	Total length requiring dredging.	Length dredged in 1915.	Total length of 30-foot channel dredged.	Length yet to be dredged.
		Miles.	Miles.	Miles.	Miles.
Division 1— Montreal to Sorel	45	22.90		22.90	All completed.
Division 2:— Sorel to Batiscan.	36	12.45		12.45	All completed.
Division 3:— Lake St. Peter.	20	18.00		* 0.20 †17.80	
Division 4:— Batiscan to Quebec.....	59	10.00	0.05	8.30	1.70
Division 5:— Quebec to the Traverse.....	60	6.65		4.65	2.00
Total.....	220	70.00	0.05	66.30	3.70

*Not widened. †Widened.

SESSIONAL PAPER No. 21

PROGRESS of the Dredging operations at the date of writing, the close of the Season of 1915, 30-foot project.

Locality.	Length of Dredging.		Cubic Yards yet required to be done.
	Required.	Done.	
	Miles.	Miles.	
Division 1—			
Longueuil shoal		1.10	
Longue Pte. to Pointe aux Trembles (E.H.).....		5.05	
Ile Ste. Therese..		0.04	
Varennas to Cap St. Michel..		3.00	
Cap St. Michel to Verchères..		4.50	
Verchères traverse.		1.10	
Verchères to Contrecoeur...		1.70	
Contrecoeur channel..		6.05	
Total.		22.90	
Division 2—			
Sorel to Ile de Grace .		4.40	
Stone island ..		1.10	
Ile aux Raisins.		0.25	
Lake St. Peter (See Division 3)			
Port St. Francis ..		0.50	
Three Rivers .		0.50	
Cap Madaleine to Becancour ..		1.55	
Becancour to Champlain		2.25	
Champlain to Pointe Citrouille.		1.30	
Batture Perron..		0.60	
Total.		12.45	
Division 3—			
Lake St. Peter ..		*0.20	200,000
		†17.80	
Total.		18.00	200,000
Division 4—			
Batiscan to Cap Levrard.....		3.00	
Cap à la Roche channel.....	0.50	1.50	100,000
Pouillier Rayer..		1.20	
Cap Charles.		0.90	
Grondines.		0.80	
Lotbiniere.		0.40	
Cap Sante..		0.20	
Ste. Croix....	0.60	0.30	300,000
St. Augustin	0.60		500,000
Total.. . . .	1.70	8.30	900,000
Division 5—			
Quebec to The traverse	2.00	4.65	550,000
Total.. . . .	2.00	4.65	550,000
Totals.	3.70	66.30	1,650,000

*Not widened. †Widened.

7 GEORGE V, A. 1917

PROGRESS of Dredging operations at date of writing, the close of the season of 1915, 35-foot project.

Locality.	Distance, English miles.	Total length requiring dredging.	Length dredged in 1915.	Total length of 35-foot channel dredged.	Length yet to be dredged.
		Miles.	Miles.	Miles.	Miles.
Division 1:— Montreal to Sorel	45	28.63	5.52	9.64	18.99
Division 2:— Sorel to Batiscan.....	36	19.75	1.17	2.42	17.33
Division 3:— Lake St. Peter	20	18.22	1.33	16.56	1.76
Division 4:— Batiscan to Quebec	59	15.74			15.54
Division 5:— Quebec to Goose Cape (North channel)	36	8.14		0.75	7.39
Total	226	90.48	8.02	29.37	61.01

SESSIONAL PAPER No. 21

PROGRESS of the Dredging Operations at the date of writing the close of the
Season of 1915, 35-foot project.

Locality.	LENGTH OF DREDGING IN MILES.		Cubic yards yet to be dredged.	Cubic yards dredged.
	Yet to be done.	Done.		
Division 1—				
Longueuil shoal..	1.88		573,259	
Longue Pte. traverse	0.39	0.08	374,672	51,550
Longue Pte. curve.	1.32		657,546	
Pte. aux Trembles channel..	1.23	2.71	1,375,057	1,028,375
Ile Ste. Therèse channel	1.12		275,100	
Varennos curve.	1.04	1.54	249,427	2,127,150
Cap St. Michel curve.	0.56		385,000	
Cap St. Michel to Verchères.	3.78	0.94	1,702,632	571,200
Verchères traverse	1.24		452,241	
Verchères to Contrecoeur..	1.91		857,837	
Contrecoeur channel.	3.91	4.37	2,583,713	2,637,768
Lanoraie to Sorel.	0.61		119,466	
Totals Division 1..	18.99	9.64	9,605,950	6,416,034
Division 2—				
Sorel to Ile de Grace	2.93	2.05	1,300,260	1,620,450
Stone island.	1.74	0.37	692,890	248,125
Ile aux Raisins	2.09		881,800	28,200
Port St. Francis.	1.00		590,253	42,728
Three Rivers..	0.72		410,147	
Cap Madeleine to Becancour.	2.40		979,118	
Becancour to Champlain..	1.16		717,500	
Champlain to Pte. Citrouille..	4.06		1,706,759	
Batture Perron..	1.23		456,000	
Totals Division 2 . .	17.33	2.42	7,734,727	1,939,503
Division 3—				
Lake St. Peter	1.76	16.56	498,579	10,267,475
Division 4—				
Batiscan to Cap Levrard	4.48		2,386,168	
Cap Levrard channel	1.27		781,666	
Cap à la Roche curve..	2.06		1,836,859	
Cap Charles channel..	2.04		1,077,416	
Grondines .	0.83		513,332	
Lotbinière..	0.47		321,480	
Cap Santé .	1.51		655,561	
Ste. Croix.	1.47		798,518	
St. Augustin..	1.41		826,207	
Totals Division 4..	15.54		9,197,207	
Division 5—				
Quebec to Goose Cape (North Channel) ...				
Madame Reef shoal	2.84		2,585,132	
West Sand and east narrows shoals	4.55	0.75	4,343,673	9,224,368
Totals Division 5..	7.39	0.75	6,928,805	9,224,368
Totals.....	61.01	29.37	33,965,268	27,847,389

ABSTRACT of Work of Dredging Fleet during Fiscal Year ended March 31, 1916.

Dredge.	Locality of Dredging	Time of Service	Normal working hours, 24 per day.	Hours actual dredging.	Number of scows filled.	Number of cubic yards dredged (scow measurement.)	Depth of dredging at low water.	Width in feet.	Character of Soil.	Remarks.
<i>Laral</i> (No. 1)	Montreal Harbour	Days, 169	Hours, 3,708	2,491½	310	79,472	Ft. In 30 0	Feet. 600	Stones, gravel and boulders.	Capt. Jeffrey Baron.
<i>Laurier</i> (No. 2)	Varennes Curve	47	1,044	744½	502	87,850	35 0	550 to 600	Clay.	Captain Joseph St. Pierre.
	Stone island ..	16	560	194	172	30,100	35 0	450	Clay.	
	Grondines	78	1,704	866½	432	23,563	30 0	450	Clay, stones and boulders.	
	Cap Charles channel .	26	576	352½	37	6,733	30 0	450	Clay, stones and boulders (cleaning up).	
	Pte. aux Trembles channel.	20	444	218½	122	21,350	35 0	450	Clay.	
		187	4,128	2,402	965	169,506				
<i>Lady Aberdeen</i> (No. 3)	Pte. aux Trembles channel.	97	2,136	1,446½	375	61,175	35 0	450	Clay and black sand.	Captain Noc Baron.
	Long Point traverse..	47	1,032	783½	385	51,550	35 0	450	Clay and stones .	
	Nicolet traverse...	36	792	288½	262	42,728	35 0	450 500	Clay and stones .	
		180	3,960	2,518½	1,022	155,453				
<i>Lady Minto</i> (No. 4)	Pte. aux Trembles channel.	99	2,172	1,515	879	171,775	35 0	450	Clay...	Capt. Jos. Peloquin
	Stone Island .	86	1,896	1,278	925	218,025	35 0	450	Clay...	
		185	4,068	2,793	1,804	389,800				
<i>Lafontaine</i> (No. 5)	Varennes curve..	62	1,368	811	548	99,525	35 0	550 to 600	Clay...	Capt. Raphael Matt.
	Cap à la Roche curve	124	2,724	1,186	470	84,627	30 0	450 to 550	Shale rock.	
		186	4,092	1,997	1,018	184,152				

SESSIONAL PAPER No. 21

Baldwin (No. 6)	Grand Chenal ..	14	312	156½	54	13,375	15	0	400	Clay....	Capt. Antoine Morin
	Longueuil shoal (Mont- real harbour).	36	792	442½	67	13,200	30	0	850	'lay, stones and hard- pan.	
	Champlain channel....	72	1,584	722½	386	77,200	30	0	450	Sand (cleaning up).	
	Ile aux Raisin traverse	20	444	134½	141	28,200	35	0	450	'lay and sand.	
	Varenes curve.....	16	348	132½	103	20,500	35	0	550 to 600	'lay and stones.	
	Pte. aux Trembles channel.	9	204	86½	41	8,200	35	0	450	'lay.	
		167	3,684	1,675	792	160,675					
	Lake St. Peter, curve No. 2.	72	1,584	898½		803,562	35	0	450 to 600	Stiff clay	Capt. Chas. Lavallee.
	Contrecoeur channel...	84	1,836	937½		787,243	35	0	450	'lay and stones.	
		156	3,420	1,836		1,590,805					
Beaujeu (No. 8)	North channel, West sand....	70½	1,524	1,232½	445	690,818	35	0	1,000	Sand, gravel and stones	Captain A. Bourget
	North channel, East narrows..	102½	2,232	1,957	517	824,750	35	0	1,000	Sand, gravel and stones	
		173	3,756	3,189½	962	1,515,568					
	North channel, West sand.	93	2,016	1,403½	369	423,000	35	0	1,000	Sand, gravel and stones	Captain A. Hoffman
Galveston (No. 9)	North channel, East narrows ..	65	1,428	1,095½	239	259,000	35	0	1,000	Sand, gravel and stones	
		158	3,444	2,499	608	682,000					
	Sorel Harbour.....	14	140	76	31	7,750	22	0		Sand and clay (clean- ing up)....	Capt. Corme Beaulac
	Repentigny traverse..	49	980	580½	566	141,500	15	0	450	'lay.	
Dipper Dredge (No. 10)	Cap St. Michel curve.	47	940	570½	585	146,250	30	0	500 to 700	'lay.	
		110	2,060	1,227	1,182	295,500					
	Forsyth shoal (Mont- real harbour).....	171	3,420	1,761	1,370	410,900	30	0	850	Hardpan and stones.	Captain W.A. Le Beau.
	Pte. aux Trembles channel.	12	264	190½	81	18,225	35	0	450	Shale rock and clay.	Capt. Alexis Morin
Elevator Dredge (No. 12)	Ile de Grace channel..	4	84	55	40	9,000	35	0	450	'lay.	
	Cap Charles channel..	102	2,244	1,415½	396	89,436	30	0	450	Shale rock and boul- ders.	
	St. Ours traverse.....	35	768	406	365	82,125	35	0	450	'lay and stones.	
		153	3,360	2,070½	882	198,786					

ABSTRACT of Work of Dredging Fleet during Fiscal Year ended March 31, 1916—*Concluded.*

Dredge.	Locality of Dredging	Time of Service.	Nominal working hours, 24 per day.	Hours actual dredging.	Number of scows.	Number of cubic yards dredged (seaw measurement.)	Depth of dredging at low water.	Width in feet.	Character of Soil.	Remarks.
<i>Elevator Dredge</i> (No. 13)....	Ste. Anne traverse Fle de Grace channel	Days. 48 138	Hours. 1,056 3,036	646½ 1,796½	684 2,266	169,950 621,500	Pt. In 35 0 35 0	Feet. 450 450	Clay. Clay.	Capt. Pierre Millette
		186	4,092	2,443	2,950	791,450				
<i>Elevator Dredge</i> (No. 14)...	Ste. Ours traverse.. Bellmouth curve.. Cap St. Michel- Verchères channel	95 21 52	2,088 468 1,140	1,317 310½ 792	1,271 299 641	508,400 119,600 250,400	35 0 35 0 35 0	450 450 to 850 450	Clay.. Clay.	Capt. J. Goudreault.
		168	3,696	2,419½	2,211	884,400				
<i>Elevator Dredge</i> (No. 15).....	Ste. Ours traverse.. Cap St. Michel- Verchères channel.	111 61 172	2,436 1,344 3,780	1,442½ 689 2,131½	1,599 787 2,386	639,600 314,800 954,400	35 0 35 0	450 450	Clay..... Clay.	Capt. John Robidou.
						8,462,957				

SESSIONAL PAPER No. 21

CLASSIFICATION of Disbursements for Fiscal Year ended March 31, 1916.

Vessels.	Fuel.	Wages.	Board.	Stores and Materials.	Repairs and Labour.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Dredge <i>Laval</i> (No. 1)	6,659 63	9,071 25	2,881 40	4,538 32	15,907 48
Tug <i>Varennas</i>	4,521 28	4,964 30	1,893 84	1,307 49	1,575 90
Dredge <i>Laurier</i> (No. 2).....	7,361 57	9,231 23	3,088 49	3,539 08	9,912 32
Tug <i>Chambly</i>	2,706 83	4,782 91	1,811 75	725 89	1,125 57
Dredge <i>Lady Aberdeen</i> (No. 3).....	8,522 09	9,597 77	3,144 71	3,103 79	14,020 95
Tug <i>Emilia</i>	2,498 13	4,239 64	1,576 86	663 74	2,031 94
Dredge <i>Lady Minto</i> (No. 4).....	6,350 42	9,299 66	3,093 21	5,198 20	10,324 36
Tug <i>Iberville</i>	4,368 13	4,995 39	1,882 62	707 93	1,850 11
Dredge <i>Lafontaine</i> (No. 5).....	11,385 34	10,092 16	3,281 96	4,243 29	11,741 68
Tug <i>Lac St. Pierre</i>	4,351 77	4,857 30	1,830 96	1,180 43	1,967 87
Dredge <i>Baldwin</i> (No. 6)	6,841 99	8,826 99	2,892 88	4,367 19	14,831 58
Tug <i>Lanoraie</i>	2,148 32	4,269 13	1,596 06	867 12	987 81
Dredge <i>J. Israel Tarte</i> (No. 7).....	30,321 35	16,546 75	5,111 29	7,202 04	24,338 32
Tug <i>Lotbinière</i>	3,723 63	4,964 04	1,926 34	1,036 63	2,861 70
Tug <i>Carmelia</i>	2,640 85	2,749 06	960 80	624 67	2,637 40
Dredge <i>Beaujeu</i> (No. 8).....	24,776 54	17,544 12	5,241 82	1,339 83	19,679 93
Dredge <i>Galveston</i> (No. 9)	17,594 54	14,304 29	4,071 03	1,590 60	17,331 18
Tug <i>Jas. Howden</i>	Divided equally between Nos. 8 and 9.		3,725 07	5,264 07	2,379 95
Dipper dredge (No. 10).....	7,049 51	9,379 15	2,721 95	2,828 60	9,788 18
Tug <i>Contrecoeur</i>	4,029 77	5,345 46	2,093 87	2,272 97	1,938 67
Dipper Dredge (No. 11).....	7,987 97	10,661 92	3,017 26	2,950 13	9,605 45
Tug <i>Deschaillions</i> ...	6,237 81	5,722 00	2,253 41	2,077 06	5,096 94
Elevator dredge (No. 12).....	10,198 33	9,937 35	3,377 60	3,380 97	7,898 12
Tug <i>Laviolette</i>	4,336 27	4,980 97	1,874 14	1,043 23	1,045 61
Elevator Dredge (No. 13).....	12,066 77	9,849 13	3,406 79	3,180 63	7,373 01
Tug <i>Lavaltrie</i>	7,219 37	4,973 95	1,917 52	1,569 15	1,272 47
Elevator Dredge (No. 14).....	10,411 23	11,097 67	3,485 81	2,512 42	9,642 59
Tug <i>Becancour</i>	5,474 65	5,701 75	2,188 03	1,838 94	2,059 58
Elevator Dredge (No. 15).....	10,520 83	11,038 15	3,533 01	2,291 91	9,607 67
Tug <i>Portneuf</i> ..	2,491 61	4,927 14	1,906 94	1,050 69	1,156 89
Str. <i>De Levis</i>	Divided equally		2,912 94	5,544 76	1,894 11
Tug <i>Jessie Hume</i> ..	$\frac{1}{2}$ to each dredge.		3,246 62	2,900 23	954 11
Stone-lifter No. 3.....	199 50	1,297 00	380 13	409 40	1,153 30
Stone-lifter No. 4.....	Divided equally		403 75	1,565 21	442 05
Stone-lifter No. 5....	between Elevator		304 00	1,552 42	402 83
Rock-cutter No. 1....	dredges.		2,389 25	4,444 74	1,573 90
Floating Shop...	104 50	1,200 85	574 25	370 38	1,219 41
Construction for dredging fleet—					
Dredge No. 2, hull and deck renewed					
" 10, New dipper arm					
Tug <i>Emilia</i> , hull renewed ..					
" <i>Lac St. Pierre</i> , hull renewed ..					
" <i>Lotbinière</i> , boiler renewed					
Re wreck of Str. <i>De Levis</i> ..					
Totals.....	248,082 07	257,719 91	86,663 68	77,168 83	231,737 69

DETAILS of Dredging Locality and Cost per Cubic Yard.

Expendi- ture, New Plant.	Proportion of Gen- eral and Office Ex- penses, etc.	Expenditure for each Vessel.	Floating Shop, Rock- crusher and Stone Lifter Ser- vice, Eleva- tor Dredges.	Tug Service.	Inspection Towing, Sweeping, etc.	Total cost of Operations of each Dredge and Plant during Fiscal Year.	Total Expenditure on Different Appropri- ations.
\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
	3,260 71	42,318 79	3,069 53	15,453 52	1,589 61	62,431 45	
	1,190 71	15,453 52					
	2,766 04	35,898 73	3,069 52	12,084 04	1,589 61	52,641 90	
	931 09	12,084 04					
	3,204 87	41,594 09	3,069 53	11,929 49	1,589 61	58,182 72	
	919 18	11,929 49					
	2,860 64	37,126 49	3,069 53	14,956 60	1,589 61	56,742 23	
	1,152 42	14,956 60					
	3,401 50	44,145 93	3,069 53	15,372 82	1,589 61	64,177 89	
	1,184 49	15,372 82					
	3,152 40	40,913 03	3,069 53	10,692 29	1,589 61	56,264 46	
	823 85	10,692 29					
	6,972 54	90,492 29		26,139 17	1,589 62	118,221 08	
	1,211 54	15,723 88					
	802 51	10,415 29					
	5,725 50	74,307 74		8,332 75	1,589 62	84,230 11	
	4,582 56	59,474 20		8,332 74	1,589 61	69,396 55	
	1,284 10	16,665 49					
	2,652 06	34,419 45		16,989 83	1,589 61	52,998 89	
	1,309 09	16,989 83					
	2,857 04	37,079 77		23,172 70	1,589 61	61,842 08	
	1,785 48	23,172 70					
	2,904 60	37,696 97	3,069 53	14,388 90	1,589 61	56,745 01	
	1,108 68	14,388 90					
	2,995 09	38,871 42	3,069 53	18,367 71	1,589 61	61,898 27	
	1,415 25	18,367 71					
	3,101 40	40,251 12	3,069 53	18,704 12	1,589 61	63,614 38	
	1,441 17	18,704 12					
	3,088 19	40,079 76	3,069 53	12,496 11	1,589 61	57,235 01	976,622 03
	962 84	12,496 11					
	1,142 28	14,824 95					
	694 94	9,019 22					
	287 12	3,726 45					
	304 04	3,945 97					
	385 12	4,998 24					
	1,099 18	14,265 61					
	289 63	3,759 02					
6,910 78							
908 16							
1,990 00							
2,098 70							
2,872 20							
10,418 87							25,198 71
25,193 71	75,249 85	976,622 03	30,695 29	227,412 79	23,844 17	976,622 03	1,001,820 74

SESSIONAL PAPER No. 21

DETAILS of Dredging Locality and Cost per Cubic Yard.

Dredging.	Total cost of operations on each dredge and plant during Fiscal Year.	No. of days in operation, each dredge.	Cost per day, operating dredges and plant.	Days working, each locality.	Cost of work, each locality.	Total cost of operations of each dredge.	Number of cubic yards dredged in each locality.	Total cubic yards for each dredge.	Cost per cubic yard each locality.	Average cost per cubic yard for each dredge.	Kind of material dredged.	Locality of dredging.
Dredge Latul (No. 1)	\$ cts. 62,431 45	169	\$ cts. 369,42	169	\$ cts. 62,431 45	62,431 45	79,472	79,472	Cts. 78 56	Cts. 78 56	Stones, gravel and boulders.	Montreal harbour (ship channel).
Dredge Laurier (No. 2)	52,641 90	187	281 51	47 16 78 26 20	13,230 85 4,504 12 21,957 59 7,319 19 5,630 15	62,431 45	87,850 30,100 23,563 6,733 21,350	79,472	15 06 14 96 93 19 108 71 26 37	78 56	C'lay... C'lay... C'lay, stones and boulders C'lay, stones and boulders (cleanings up),... C'lay...	Varenn'es curve. Stone island. Grondines. Cap Charles channel. Pte. aux Trembles channel
Dredge Lady Aberdeen (No. 3).	58,182 72	180	323 24	97 47 36	31,354 02 15,192 16 11,636 54	58,182 72	61,175 51,550 42,728	169,596	51 25 29 47 27 23	31 01	C'lay and blacksand. C'lay and stones. C'lay and stones.	Pte. aux Trembles channel. Long Pointe traverse. Nicolet traverse.
Dredge Lady Minto (No. 4).	56,742 23	185	306 71	99 86	30,364 76 26,377 47	56,742 23	171,775 218,025	389,800	17 67 12 10	14 55	C'lay... C'lay... C'lay... Shale rock...	Pte. aux Trembles channel. Stone island. Varenn'es curve. Cap à la Roche curve.
Dredge Lafontaine (No. 5)	64,177 89	186	345 04	62 124	21,392 63 42,785 26	64,177 89	99,525 84,627	184,152	21 49 50 56	34 85	C'lay... C'lay, stones and boulders. pen.	Grand chenal. Longueuil shoal (Montreal harbour).
Dredge Baldwin (No. 6)	56,264 46	167	336 91	14 36	4,716 78 12,128 86	56,264 46	13,375 13,200	160,675	35 26 91 88	35 02	Sand (cleaning up) C'lay and sand C'lay and stones C'lay...	C'hamplain channel. Ile aux Raisin traverse. Varenn'es curve. Pte. aux Trembles channel
Dredge J. J. L. Tarte (No. 7).	118,221 08	156	757 83	72 84	54,563 57 63,657 51	118,221 08	803,562 787,243	1,590,805	6 79 8 09	7 43	Stiff clay C'lay and stones.	Jake St. Peter, curve No. 2 C'entrecoeur channel.

DETAILS of Dredging Locality and Cost per Cubic Yard—Concluded.

Dredges.	Total cost of operations and plant during Fiscal Year.	No. of days in operation, each dredge.	Cost per day, operating dredges and plant.	Days working, each locality.	Cost of work, each locality.	Total cost of operation, each dredge.	Number of cubic yards dredged in each locality.	Total cubic yards for each dredge.	Cost per cubic yard (cost per locality).	Average cost per cubic yard for each dredge.	Kind of material dredged.	Locality of dredging.
Dredge <i>Bougen</i> (No. 8)	\$ 84,230 11	173 48	\$ 88	70 102	34,324 99 49,905 12	84,230 11	690,818 824,750	1,515,568	4 97 6 05	5 54	Sand, gravel and stones Sand, gravel and stones	North channel, West sand North Channel, East Narrows.
Dredge <i>Guthrie</i> (No. 9)	69,396 55	158 43	22	93 65	40,847 34 28,549 21	69,396 55	423,000 259,000	682,000	9 65 11 02	19 17	Sand, gravel and stones Sand, gravel and stones	North channel, West sand North channel, East Narrows.
Dipper <i>Dredge</i> (No. 10)	52,998 89	110 48	81	14	6,745 31	52,998 89	7,750	87 04	16 68 15 48	17 93	Sand and clay (cleaning up) Clay Clay.	Sorel harbour. Repentigny traverse Cap St. Michel Curve.
Dipper <i>Dredge</i> (No. 11)	61,842 08	171 36	65	171	61,842 08	61,842 08	410,900	15 05	15 05	15 05	Hard pan and stone	Forsyth shoal (Montreal harbour).
Elevator <i>Dredge</i> (No. 12)	56,745 01	153 37	88	12 4	4,450 59 1,483 55	61,842 08	18,225 9,000	410,900	24 42 16 48	15 05	Shale-rock and clay Clay.	Pic aux Trembles channel. Ile de Grace channel.
Elevator <i>Dredge</i> (No. 13)	61,898 27	186 32	79	48 138	37,830 00 12,980 89	56,745 01	89,430 82,125	198,786	42 29 15 81	28 54	Shale-rock and boulders Clay and stones.	Cap Charles channel. St. Ours traverse.
Elevator <i>Dredge</i> (No. 14)	63,614 38	168 37	66	95 21 52	35,972 42 7,951 80 19,690 16	61,898 27	508,400 119,600 256,400	791,450	9 39 7 39	7 82	Clay. Clay. Clay.	St. Anne traverse. Ile de Grace channel.
Elevator <i>Dredge</i> (No. 15)	57,235 01	172 32	76	111 61	36,936 55 20,298 46	63,614 38	639,600 314,800	884,400	7 07 6 65 7 67	7 19	Clay. Clay. Clay.	St. Ours traverse. Bellmouth curve. Cap St. Michel-Verchères channel.
	976,622 03	2,521		2,521	976,622 03	976,622 03	8,462,957	8,462,957	5 77 6 45	5 99	Clay. Clay.	St. Ours traverse. Cap St. Michel-Verchères channel.

SESSIONAL PAPER No. 21

RIVER ST. LAWRENCE SHIP CHANNEL DREDGING FLEET.

The following is a description of the dredging plant at the end of the season 1915, owned and operated by the Department of Marine in connection with the River St. Lawrence Ship Channel, between Montreal and Father Point:—

DREDGES.

The Elevator Dredge "Laval" (No. 1), wooden hull.—Length over all, 150 feet; breadth of beam, 30 feet; depth of hold, 14 feet; average draught, 11 ft; greatest working depth, 42 feet; hull built in Ottawa, in 1894; steel buckets; working capacity per day in hard material, 1,000 to 2,000 cubic yards.

The Elevator Dredge "Laurier" (No. 2), wooden hull.—Length over all, 163 feet; breadth of beam, 32 feet; depth of hold, 14 feet; average draught, 10 feet; greatest working depth 45 feet; built in Sorel shipyard in 1897; steel buckets, working capacity per day in hard material, 1,000 to 2,000 cubic yards.

The Elevator Dredge "Lady Aberdeen" (No. 3), steel hull.—Length over all, 148 feet; breadth of beam, 32 feet; depth of hold, 13 feet; average draught, 8.5 feet; greatest working depth, 42.5 feet; built at Sorel shipyard in 1900; steel buckets; greatest working capacity per day in hard material, 1,000 to 2,000 cubic yards.

The Elevator Dredge "Lady Minto" (No. 4), steel hull.—Length over all, 148 feet; breadth of beam, 32 feet; depth of hold, 13 feet; average draught, 8.5 feet; greatest working depth, 42.5 feet; built at Sorel shipyard in 1900; steel buckets; working capacity per day in hard material, 1,000 to 2,000 cubic yards.

The Elevator Dredge "Lafontaine" (No. 5), wooden hull.—Length over all, 168 feet; breadth of beam, 32 feet; depth of hold, 14 feet; average draught, 9 feet; greatest working depth, 45 feet; built at Sorel shipyard in 1901; steel buckets; working capacity per day in hard material, 1,000 to 2,000 cubic yards.

The Elevator Dredge "Baldwin" (No. 6), wooden hull.—Length over all, 165 feet; breadth of beam, 34 feet; depth of hold, 14 feet; average draught, 8 feet; greatest working depth, 40 feet; built at Sorel shipyard in 1902; one cubic yard buckets strengthened for fairly hard material; working capacity per day in medium material, 2,500 to 3,500 cubic yards.

The hydraulic Dredge "J. Israel Tarte" (No. 7), steel hull.—Length over all, 160 feet; breadth of beam, 42 feet; depth of hold, 12.5 feet; average draught, 6 feet; length of suction pipe, 80 feet; greatest working depth, 47 feet; built at Polson Ironworks, Toronto, 1902; working capacity per day in soft material, 12,000 to 20,000 cubic yards.

Discharge Pipe and Pontoons of Dredge "J. I. Tarte" (No. 7).—Twenty-seven lengths of pipe, 36 inches diameter by 100 feet long; one length of pipe, 36 inches diameter by 35 feet long; twenty-seven pairs of pontoons for floating pipes, 42 inches diameter by 90 feet long.

Pontoon Anchor Scow for Dredge "No. 7."—Wooden hull; length over all, 74 feet 7 inches; breadth of beam (outside plank), 27 feet 6 inches; depth at side, 7 feet 0 inches; built at Sorel shipyard, 1909.

7 GEORGE V. A. 1917

Winch Scow for Dredge "J. I. Tarte" (No. 7).—Wooden hull; length over all, 60 feet 8 inches; breadth of beam (outside plank), 21 feet 0 inches; depth at side, 7 feet 6 inches; built at Sorel shipyard, 1902.

The Sea-going Suction Hopper Dredge "Beaujeu" (No. 8).—Steel hull; twin screw; length between perpendiculars, 264 feet; breadth of beam, 45 feet; depth of hold, 20 feet; capacity of hoppers, 2,000 cubic yards in 45 minutes; greatest working depth, 65 feet; draught when loaded, 15 feet; ordinary speed, 9 statute miles; built at Sorel shipyard in 1907.

The Suction Hopper Dredge "Galveston" (No. 9).—Steel hull; twin screw; length over all, 233 feet; breadth of beam, 39 feet; depth of hold, 15.5 feet; draught when loaded with 1,800 tons, 14 feet 9 inches aft, and 13 feet; 1 inch forward; greatest working depth, 55 feet; built in Germany, 1904; two suction pumps, Dutch type; 8.5 feet outside diameter; working capacity, 1,350 cubic yards in 45 minutes; hopper capacity, 1,500 cubic yards.

Dipper Dredge "No. 10," steel hull.—Length moulded, 132.5 feet; breadth moulded, 42 feet; depth at bow, 11.5 feet; depth at stern, 9.7 feet; length of spuds, 74 feet; bucket capacity, one 11-yard for soft material, one 9-yard for hard material; capable of dredging to 50 feet; built at Sorel shipyard in 1910.

The Dipper Dredge "No. 11," steel hulls.—Length moulded, 132.5 feet; breadth moulded, 42 feet; depth at bow, 11.8 feet; depth at stern, 13.5 feet; length of spuds, 74 feet; bucket capacity, one 11-yard for soft material, one 9-yard for hard material; capable of dredging to 50 feet; built at Sorel shipyard in 1911.

The Elevator Dredge "No. 12," steel hull.—Length over all, 180 feet; breadth of beam, 40 feet; depth of hold, 12.8 feet; average draught, 9 feet; greatest working depth, 52 feet; built at Sorel shipyard in 1912; steel buckets; working capacity per day in hard material, 2,000 to 4,000 cubic yards.

The Elevator Dredge "No. 13," steel hull.—Length over all, 180 feet; breadth of beam, 40 feet; depth of hold, 12.8 feet; average draught, 9 feet; greatest working depth, 52 feet; built at Sorel shipyard in 1913; steel buckets; working capacity per day in hard material, 2,000 to 4,000 cubic yards.

Self-propelling Elevator Dredge "No. 14."—Steel hull; single screw; length between perpendiculars, 215 feet 0 inches; breadth moulded, 37 feet 5 inches; depth moulded, 14 feet 0 inches; mean draught, 9 feet 8 inches; speed, 8 knots; greatest working depth, 55 feet; built by the Collingwood Shipbuilding Company in 1914; steel buckets, one cubic yard capacity, manganese steel lip; working capacity per hour in clay, 800 cubic yards; Lloyd's 100 A.I. dredger class.

Self-propelling Elevator Dredge "No. 15."—Steel hull; single screw; length between perpendiculars, 215 feet 0 inches; breadth moulded, 37 feet 5 inches; depth moulded, 14 feet 0 inches; mean draught, 9 feet 8 inches; speed, 8 knots; greatest working depth, 55 feet; built by the Collingwood Shipbuilding Company in 1914; steel buckets 1 cubic yard capacity—manganese steel lip; working capacity per hour in clay, 800 cubic yards; Lloyd's 100 A.I. dredger class.

SESSIONAL PAPER No. 21

ROCK CUTTER.

Rock Cutter No. 1, steel hull.—Length over all, 100 feet; breadth of beam, 36 feet; depth of hold, 9.3 feet; weight of ram, 25 tons; hull and machinery built by the Lobnitz Company, Renfrew, Scotland, and re-erected at Sorel shipyard in 1912.

STONE LIFTERS.

Stone Lifter No. 3, wooden hull.—Length over all, 108 feet; breadth of beam, 34 feet; depth of hold, 14 feet; built at Sorel shipyard in 1903.

Stone Lifter No. 4, steel hull.—Length over all, 100 feet; breadth of beam, 32 feet; depth of hold, 12 feet; built at Sorel shipyard in 1910.

Stone Lifter No. 5, steel hull.—Length over all, 100 feet; breadth moulded, 36 feet; depth of hold, 8 feet 7 inches; depth moulded, 9 feet 10 inches; lifting capacity, 60 tons; built at Sorel shipyard in 1914.

FLOATING SHOP.

Floating Shop, wooden hull.—Length over all, 91 feet 0 inches; breadth of beam, 27 feet 7 inches; depth at side, 7 feet 0 inches; one forge; one scraper; one emery wheel; one drill; one lathe; one 6-horsepower Foss gasoline engine; living quarters for four men; built at Sorel shipyard in 1906.

SELF-PROPELLING HOPPER BARGES.

The Self-propelling Hopper Barge No. 1.—Steel hull; single screw; length between perpendiculars, 180 feet; breadth moulded, 32 feet; depth moulded, 14 feet 6 inches; draught (loaded), 12 feet; depth of rubbing keel, 5 inches; total draught, 12 feet 5 inches; deadweight on above draught, 785 tons; indicated horse-power, 500; net capacity of hopper, 530 cubic yards; built by Messrs. Geo. T. Davie & Sons, Lévis, Que., in 1913.

The Self-propelling Hopper Barge No. 2.—Steel hull; single screw; length between perpendiculars, 180 feet; breadth moulded, 32 feet; depth moulded, 14 feet 6 inches; draught (loaded), 12 feet 7 inches; depth of rubbing keel, 5 inches; total draught, 13 feet; deadweight on above draught, 800 tons; indicated horse-power, 700; net capacity of hopper, 530 cubic yards; built by Collingwood Shipbuilding Co., Collingwood, Ont., in 1915.

TUGS.

The Ice-breaking and Emergency Tug "Lady Grey."—Steel hull; twin screw; length between perpendiculars, 172 feet; length over all, 183 feet 6 inches; breadth moulded, 32 feet; breadth extreme, 32 feet 3 inches; depth moulded, 18 feet; draught mean to bottom of flat plate keel (normal), 12 feet; draught when ice-breaking, about 13 feet; displacement in tons at 12-foot draught, 1,070; mean speed, at 12-foot draught on 6 runs over measured mile base, 14 knots; built by Vickers Sons & Maxim, Barrow-in-Furness, England, 1906.

The Tug "Bellechasse," steel hull, twin screw.—Length between perpendiculars, 130 feet; breadth moulded, 27 feet; draught aft, 10 feet 3 inches; draught forward, 8 feet 9 inches; indicated horse-power, 1,000; built by the Kingston Shipbuilding Co., Kingston, Ont., in 1913.

7 GEORGE V, A. 1917

The Tug "Frontenac," composite hull, twin screw.—Length over all, 113 feet; breadth of beam, 23 feet; depth of hold, 10 feet; average draught, 9 feet; built at Sorel shipyard in 1902.

The Tug "De Levis," wooden hull, twin screw.—Length over all, 104 feet; breadth of beam, 20 feet; depth of hold, 10 feet; average draught, 8 feet; built at Sorel shipyard in 1902.

The Tug "James Howden," wooden hull, twin screw.—Length over all, 100 feet; breadth of beam, 21 feet; depth of hold, 10 feet; average draught, 7.5 feet; built at Sorel shipyard in 1903.

The Tug "Iberville," steel hull, single screw.—Length over all, 90 feet; breadth of beam, 18 feet; depth of hold, 12 feet; average draught, 10 feet; built at Sorel shipyard in 1897.

The Tug "Lac St. Pierre," wooden hull, twin screw.—Length over all, 100 feet; breadth of beam, 21 feet; depth of hold, 10 feet; average draught, 7.6 feet; built at Sorel shipyard in 1901.

The Tug "Portneuf," wooden hull, single screw.—Length over all, 85 feet; breadth of beam, 17.3 feet; depth of hold, 9.8 feet; average draught, 8 feet; built at Sorel shipyard in 1905.

The Tug "Chambly," wooden hull, single screw.—Length over all, 84 feet; breadth of beam, 18 feet; depth of hold, 9.5 feet; average draught, 9 feet; built at Sorel Shipyard in 1893.

The Tug "Emilia," wooden hull, single screw.—Length over all, 84 feet; breadth of beam, 17 feet; depth of hold, 9 feet; average draught, 8 feet; built at Sorel shipyard in 1898.

The Tug "Lanoraie," wooden hull, single screw.—Length over all, 84 feet; breadth of beam, 17 feet; depth of hold, 9 feet; average draught, 8 feet; built at Sorel shipyard in 1901.

The Tug "Jessie Hume," wooden hull, single screw.—Length over all, 72 feet; breadth of beam, 17.2 feet; depth of hold, 10 feet; average draught, 8.5 feet; built at St. Catharines, Ont., in 1876.

The Tug "Lotbinière," wooden hull, twin screw.—Length over all, 80 feet; breadth of beam, 23 feet; depth of hold, 8 feet; average draught, 7 feet; built at Sorel shipyard in 1903.

The Tug "Carmelia," wooden hull, single screw.—Length over all, 84 feet; breadth of beam, 17 feet; depth of hold, 9 feet; average draught, 8 feet; purchased in 1904.

The Tug "Contrecoeur," wooden hull, twin screw.—Length over all, 90 feet; breadth of beam, 22.7 feet; depth of hold, 9 feet; average draught, 7 feet; built at Sorel shipyard in 1910.

The Tug "Varennnes," wooden hull, twin screw.—Length over all, 96 feet; breadth of beam, 22 feet; depth of hold, 9 feet; average draught, 7 feet; built at Sorel shipyard in 1911.

SESSIONAL PAPER No. 21

The Tug "Laviolette," steel hull, twin screw.—Length over all, 92 feet; breadth of beam, 22 feet; depth of hold, 9·3 feet; average draught, 7 feet; built at Sorel shipyard in 1912.

The Tug "Lavaltrie," steel hull, twin screw.—Length over all, 92 feet; breadth moulded, 22 feet; depth moulded, 10 feet; average draught, 6 feet 6 in.; built at Sorel shipyard in 1913.

The Tug "Becancour," steel hull, twin screw.—Length over all, 100 feet; breadth moulded, 22 feet 6 inches; depth of hold, 9 feet; average draught, 7 feet; capacity of fire pumps, 1,200 gallons (U.S.) per minute; built at Sorel shipyard in 1914.

The Tug "Deschaillons," steel hull, twin screw.—Length over all, 100 feet; breadth moulded, 22 feet 6 inches; depth moulded, 10 feet, depth of hold, 9 feet; average draught, 7 feet; fire pumps similar to those on "Becancour" to be installed; built at Sorel shipyard in 1914.

COAL BARGES.

Coal Barge No. 1, wooden hull.—Length over all, 120 feet; breadth of beam, 24 feet; depth of hold, 10 feet; capacity, 360 tons; built at Sorel shipyard in 1898.

Coal Barge No. 2, wooden hull.—Length over all, 125 feet; breadth of beam, 25 feet; depth of hold, 11 feet; capacity, 400 tons; built at Sorel shipyard in 1900.

Coal Barge No. 3, wooden hull.—Length over all, 98 feet; breadth of beam, 28 feet; depth of hold, 12 feet; capacity, 370 tons; built at Sorel shipyard in 1902.

Coal Barge No. 4, wooden hull.—Length over all, 98 feet; breadth of beam, 28 feet; depth of hold, 12 feet; capacity, 360 tons; built at Sorel shipyard in 1903.

Coal Barge No. 5, steel hull.—Length over all, 127 feet; breadth of beam, 32 feet; depth of hold, 10 feet; capacity, 360 tons; built at Sorel shipyard in 1911.

SOUNDING SCOWS.

Sounding Scow No. 1, wooden hull.—Length over all, 64 feet 0 inches; breadth of beam (outside plank), 26 feet 6 inches; depth at side, 6 feet; built at Sorel shipyard in 1896.

Sounding Scow No. 2, wooden hull.—Length over all, 95 feet 6 inches; breadth of beam (outside plank), 37 feet 9 inches; depth at side, 4 feet 6 inches; transferred from Prescott Agency in 1907, re-modeled and improved in Sorel shipyard.

Sounding Scow No. 3, wooden hull.—Length over all, 77 feet 6 inches; breadth of beam (outside plank), 33 feet 8 inches; depth at side, 7 feet 0 inches; built at Sorel shipyard in 1913.

WINCH SCOWS.

No. 1.—Winch scow used for fleet in general.—Length over all, 61 feet 6 inches; breadth of beam (outside plank), 18 feet 8 inches; depth at side, 6 feet 0 inches; built at Sorel shipyard in 1908.

No. 2.—Winch scow used for fleet in general.—Length over all, 57 feet 8 inches; breadth of beam (outside plank), 18 feet 6 inches; depth at side, 5 feet 0 inches; built at Sorel shipyard in 1908.

DERRICK SCOW.

Derrick Scow used at Sorel Shipyard in connection with construction and repairs to dredging fleet.—Length over all, 61 feet 6 inches; breadth of beam (outside plank), 28 feet 10 inches; depth at side, 6 feet 6 inches; equipped with a derrick of 5 tons lifting capacity.

HOPPER DUMPING SCOWS WITH HYDRAULIC POWER FOR CLOSING GATES.

No. 1.—Wooden hull, with hydraulic power for closing gates.—Length over all, 84 feet 6 inches; breadth of beam (outside plank), 20 feet 8 inches; depth at side, 8 feet 6 inches; capacity, 150 cubic yards; built at Sorel shipyard in 1897.

No. 2.—Wooden hull, with hydraulic power for closing gates.—Length over all, 84 feet 0 inches; breadth of beam (outside plank), 21 feet 0 inches; depth at side, 8 feet 6 inches; capacity, 150 cubic yards; built at Sorel shipyard in 1897.

No. 3.—Wooden hull, with hydraulic power for closing gates.—Length over all, 91 feet 6 inches; breadth of beam (outside plank), 23 feet 10 inches; depth at side, 8 feet 6 inches; capacity, 200 cubic yards; built at Sorel shipyard in 1898.

No. 4.—Wooden hull, with hydraulic power for closing gates.—Length over all, 95 feet 0 inches; breadth of beam (outside plank), 25 feet 0 inches; depth at side, 9 feet 6 inches; capacity, 200 cubic yards; built at Sorel shipyard in 1898.

Nos. 5 and 6.—Wooden hulls, with hydraulic power for closing gates.—Length over all, 98 feet 0 inches; breadth of beam (outside plank), 25 feet 6 inches; depth at side, 9 feet 6 inches; capacity, 200 cubic yards; built at Sorel shipyard in 1899.

No. 7.—Wooden hull, with hydraulic power for closing gates.—Length over all, 99 feet 0 inches; breadth of beam (outside plank), 25 feet 6 inches; depth at side, 9 feet 6 inches; capacity, 200 cubic yards; built at Sorel shipyard in 1901.

No. 8.—Wooden hull, with hydraulic power for closing gates.—Length over all, 98 feet 0 inches; breadth of beam (outside plank), 25 feet 6 inches; depth at side, 9 feet 6 inches; capacity, 200 cubic yards; built at Sorel shipyard in 1901.

No. 9.—Wooden hull, with hydraulic power for closing gates.—Length over all, 101 feet 0 inches; breadth of beam (outside plank), 27 feet 0 inches; depth at side, 9 feet 6 inches; capacity, 300 cubic yards; built at Sorel shipyard 1901.

Nos. 10 and 11.—Wooden hulls, with hydraulic power for closing gates.—Length over all, 93 feet 0 inches; breadth of beam (outside plank), 27 feet 6 inches; depth at side, 8 feet 6 inches; capacity, 250 cubic yards; built at Sorel shipyard 1913.

Nos. 12 and 13.—Wooden hulls with hydraulic power for closing gates.—Length over all, 100 feet 0 inches; breadth of beam (outside plank), 27 feet 0 inches; depth at side, 10 feet 6 inches; capacity, 300 cubic yards; built at Sorel shipyard 1902.

SESSIONAL PAPER No. 21

No. 14.—Wooden hull, with hydraulic power for closing gates.—Length over all, 92 feet 8 inches; breadth of beam (outside plank), 25 feet 0 inches; depth at side, 8 feet 6 inches; capacity, 200 cubic yards; built at Sorel shipyard 1905.

No. 15.—Wooden hull, with hydraulic power for closing gates.—Length over all, 93 feet 0 inches; breadth of beam (outside plank), 25 feet 0 inches; depth at side, 9 feet 0 inches; capacity, 200 cubic yards; built at Sorel shipyard 1905.

No. 16.—Wooden hull, with hydraulic power for closing gates.—Length over all, 93 feet 6 inches; breadth of beam (outside plank), 25 feet 0 inches; depth at side, 8 feet 6 inches; capacity, 200 cubic yards; built at Sorel shipyard 1909.

No. 17.—Wooden hull, with hydraulic power for closing gates.—Length over all, 94 feet 6 inches; breadth of beam (outside plank), 25 feet 6 inches; depth at side, 8 feet 6 inches; capacity, 200 cubic yards; built at Sorel shipyard 1909.

Nos. 18 and 19.—Wooden hulls, with hydraulic power for closing gates.—Length over all, 93 feet 0 inches; breadth of beam (outside plank), 27 feet 6 inches; depth at side, 8 feet 6 inches; capacity, 250 cubic yards; built at Sorel shipyard 1911.

No. 20.—Wooden hull, with hydraulic power for closing gates.—Length over all, 93 feet 6 inches; breadth of beam (outside plank), 27 feet 6 inches; depth at side, 8 feet 6 inches; capacity, 250 cubic yards; built at Sorel shipyard 1912.

No. 21.—Wooden hull, with hydraulic power for closing gates.—Length over all, 93 feet 9 inches; breadth of beam (outside plank), 27 feet 9 inches; depth at side, 8 feet 6 inches; capacity, 250 cubic yards; built at Sorel shipyard 1912.

No. 22.—Steel hull, hydraulic power, fitted with valves instead of gates for carrying sand.—Length over all, 108 feet 0 inches; breadth of beam (outside plank), 21 feet 0 inches; depth at side, 12 feet 0 inches; capacity, 200 cubic yards; built at Sorel shipyard 1912.

Nos. 23 and 24.—Steel hulls, with hydraulic power for closing gates.—Length over all, 100 feet 0 inches; breadth of beam (outside plank), 29 feet 0 inches; depth at side, 10 feet 3 inches; capacity, 250 cubic yards; built at Sorel shipyard 1915 and 1916.

Nos. 25 and 26.—Steel hulls, with hydraulic power for closing gates.—Length over all, 100 feet 0 inches; breadth of beam (outside plank), 29 feet 0 inches; depth at side, 9 feet 3 inches; capacity, 235 cubic yards; built at Sorel shipyard 1913.

Nos. 27, 28, 29 and 30.—Steel hulls, with hydraulic power for closing gates.—Length over all, 140 feet 0 inches; breadth of beam (outside plank), 30 feet 0 inches; depth at side, 11 feet 9 inches; capacity, 450 cubic yards; built at Sorel shipyard 1914.

Nos. 31 and 32.—Steel hulls, with hydraulic power for closing gates.—Length over all, 100 feet 0 inches; breadth of beam (outside plank), 29 feet 0 inches; depth at side, 10 feet 3 inches; capacity, 250 cubic yards; built at Sorel shipyard 1915.

FLAT SCOWS.

Flat Scow No. 1, wooden hull.—Length over all, 99 feet 0 inches; breadth of beam (outside plank), 27 feet 0 inches; depth at side, 10 feet 8 inches; built at Sorel shipyard 1901.

Flat Scow No. 2, wooden hull.—Length over all, 100 feet 0 inches; breadth of beam (outside plank), 27 feet 0 inches; depth at side, 10 feet 10 inches; built at Sorel shipyard 1902.

Flat Scow No. 3, wooden hull.—Length over all, 62 feet 0 inches; breadth of beam (outside plank), 18 feet 8 inches; depth at side, 6 feet 6 inches; built at Sorel shipyard 1908.

SUMMARY.

Dredges.....	15
Rock Cutters.....	1
Stone Lifters.....	3
Floating Shop.....	1
Hopper Barges (self-propelling).....	2
Tugs.....	20
Coal Barges.....	5
Sounding Scows.....	3
Winch Scows.....	3
Derriek Scows.....	1
Anchor Scows.....	1
Dumping Scows.....	32
Flat Scows.....	3
	<hr/>
	90

SESSIONAL PAPER No. 21

APPENDIX No. 4.

SOREL SHIPYARD.

SOREL, June 7, 1916.

The Deputy Minister of Marine,
Ottawa, Ont.

SIR,— I have the honour to submit the following annual report of work done at Sorel shipyard during the fiscal year ending 31st March, 1916.

At the beginning of the year, 1st April, 1915, the winter repairs and renewals and outfitting of the vessels of the St. Lawrence Ship Channel fleet were practically all completed and the crews being taken on for the coming season's work.

The Richelieu river was clear of ice on the 3rd April, 1915, and the St. Lawrence river, at Sorel, on the 5th April, 1915. The first dredge of the fleet left Sorel to go into commission on the 5th May.

During the season the vessels were all maintained in a good and serviceable condition and the necessary operating repairs carried out.

Fifteen dredges were put and kept in working condition during the season, and seventeen tugs of the St. Lawrence Ship Channel fleet were overhauled, repaired, and painted during the winter months, and minor repairs effected during the summer months.

Five coal barges, twenty-six dumping scows, and four flat scows, stone lifters and rock cutter were also repaired and kept in serviceable condition.

The floating shop was fitted with a steam engine, the former gas engine not having proved satisfactory, and the fenders and deck were repaired.

REPAIRS TO DOMINION STEAMERS.

Lady Grey (Ice breaker).—This vessel is an ice-breaker, and the repairs are done during the fall. The repairs were as follows during the season:—

General overhauling of deck equipment; repairs to engine and auxiliaries. The machinery was overhauled and heavy repairs made to boilers, that is, additional stay-bolts in back of the four boilers; sixty-two tubes were renewed in the two forward boilers. Installation of one new sanitary pump. The vessel was painted and varnished where required.

C.G.S. *Frontenac.*—Summer repairs: This steamer was hauled out on October 29 to renew *lignum vitæ* in bushes. Some caulking to hull and deck was made at the same time. Engine: had just the ordinary repairs during summer.

Winter repairs: Repairs to deck-houses and wooden rail, bulwark, stanchion, combing, fenders, and to deck. Engine: pistons of main engine were repaired, and machinery overhauled.

A coat of paint was applied inside and outside of vessel as usual in spring.

C.G.S. *Dollard.*—Summer repairs (hull): During the summer the upper deck was caulked once, and the vessel was painted.

Machinery: Some caulking was done to the boiler besides the ordinary winter repairs.

Winter repairs: This vessel was prepared for sea-going, which necessitated the stiffening of hatches, building of breakwater, etc. The oil-heating system of the boiler was changed into the coal-heating system. The oil tanks in the bunkers had to be cut in pieces and removed.

Wood sheathing was placed on the bunker floor, deck hatches installed, and also grate bars to furnaces.

7 GEORGE V, A. 1917

The general repair and overhauling of machinery record reads as follows: Overhauling of fresh water pump with new set of valves; new bracket for reverse engine rod; repairs to reducing valves; overhauling of two condensers; general overhauling of windlass, winches, pumps, dynamo, steam pipes, and electric light system, and recharging of storage batteries.

Steamer *Bellechasse*.—This vessel, working below Quebec, had only a few pieces of machinery supplied by the shipyard and shipped per R. & O. boat. She came to the shipyard a couple of times during the summer for light repairs to her boiler and engine.

Winter repairs: Were done at Quebec, the vessel being under steam early this spring.

REPAIRS TO VESSELS OF PUBLIC WORKS DEPARTMENT.

C.G.S. *W. S. Fielding*.—This vessel had four cast steel bucket rollers and one top tumbler and shaft prepared at the shipyard.

CONSTRUCTION OF LIGHTS DEPARTMENT.

A good deal of work was done for this department, and all necessary equipment was supplied for the construction of lights and maintenance of buoys, such as cleats, bolts, chisels, fairleads, deck plugs, buoy forgings, rings, rods, etc.

Barge *Acetylene*.—The summer repairs on this vessel were made by the Construction of Lights Department, except a few small ones as below: galley stove, and piston rings for capstan were supplied by the shipyard.

This vessel was hauled out on the 29th April to repair the iron sheathing of her hull and for painting.

Winter repairs: Had just the absolutely necessary repairs to deck houses, deck, and railings.

Steamer *Verchères*.—Was hauled out on May 24 for fitting a new propeller wheel, and also for repairs to stern bush.

Winter repairs: New davits for a larger life-boat; repairs to combing. Paint was applied inside and outside in early spring.

Boiler: Tubes renewed, electric welding in furnaces.

Engine: Repairs to piston of main engine, to injector, drains of engine, to steam connections and speaking tubes.

C.G.S. *Reserve*.—This vessel was hauled out on June 19, 1915, for repairs to hull, steel sheathing, and to stern tube.

Winter repairs (hull): Repairs to main deck, fenders, rails, and deck-houses.

General overhauling of machinery and heavy repairs to boiler, that is tubes renewed, repairs to piping, electric welding and brickwork in furnaces. A coat of paint was given inside and outside of this vessel in spring.

Steamer *Shamrock*.—Summer repairs: repairs to feed pump, throttle valve and derrick.

This vessel was hauled out on April 20, 1915, for repairs to rudder and to renew propeller wheel; the hull was painted under water line.

Winter repairs: Had five wooden stanchions renewed; also repairs to floor in engine room; deck was canvassed and repaired. Had a coat of paint given in spring, outside only.

Engine: One set of brass valves in sanitary pump. General overhauling and repairs to engine and steam pipes; one new port hole for houses, new rod for steering gear.

Boiler: Caulking of stays in combustion chamber and electric welding inside of furnaces. The bulwark in the boiler had to be removed.

SESSIONAL PAPER No. 21

Scow *Quebec*.—This vessel was hauled out on May 20, 1915, for caulking and repairs to her hull, which was sheathed for protection against ice. Other repairs on this vessel were made in Construction of Lights Department shop.

Launch *Margot*.—The gasoline launch *Margot*, belonging to the shipyard, but on loan to this department, had repairs to her hull and engine. A few repairs to their operating plant were also made, such as overhauling of electric wires, etc.

The pile driver belonging to this Department was kept in good order and had the operating repairs done at the shipyard.

Buoys.—One hundred steel spar buoys to replace the wooden buoys formerly used in the channel, were made for this department. Incidental repairs to winter buoys have also been made. Six "Aga" buoys were also reconstructed during the season.

NEW CONSTRUCTIONS.

No. 54.—This vessel, named *Bradbury*, is a twin-screw steel wood-sheathed steamer for the Department of Naval Service, for fisheries patrol on lake Winnipeg, of the following dimensions:—Length, B.P., 151 feet 0 inches; length O. A., 160 feet 6 inches; breadth moulded, 26 feet 6 inches; depth, 13 feet 6 inches; draught, 7 feet 6 inches.

Work on this vessel was continued at Selkirk, and she was successfully launched on May 19, 1915; was then completed, and trial trip made on Aug. 6, when a maximum speed of 11.6 knots was obtained with slightly over 1,000 I.H.P. The vessel is fitted with two Scotch marine boilers 11 feet 0 inches diameter by 11 feet 6 inches long, with a working pressure of 150 pounds per square inch; these were made in the shipyard and are fitted with Howden's draught.

The engines are twin-screw triple expansion, jet-condensing, having cylinders 11 inches, 18 inches, and 30 inches diameter by 20-inch stroke, and were supplied by Polsons Ltd., Toronto.

The gasoline launch, which was built in the shipyard and fitted with a 25-horse-power engine, was tried before delivery to Selkirk, and a mean speed of 11½ miles per hour was obtained.

From all reports received, this vessel has given great satisfaction.

No. 57.—This vessel, named *Detector*, is a twin-screw steel steamer fitted for sounding and testing purposes in the St. Lawrence ship channel, of the following dimensions:—Length, B. P., 140 feet 0 inches; length O. A., 147 feet 0 inches; breadth moulded, 35 feet 0 inches; depth, moulded 15 feet 0 inches; draught, loaded, 10 feet 0 inches.

This vessel was launched on May 24, 1915, and completed sufficiently for trials, which took place on the 10th, 13th, and 27th November, 1915.

The main speed of 10.183 knots was obtained with an indicated horsepower of about 600.

On the third day a trial of the sounding apparatus was made and found to be satisfactory, the vessel steering well with the boom on the bottom at a speed of 4 miles per hour, which is about her working speed.

The vessel is fitted with twin-screw compound surface-condensing engines made by the New Burrell Johnson Co., of Yarmouth, N.S., having cylinders 14 inches and 18 inches diameter by 21-inch stroke.

The boiler is of the Scotch marine type, 15 feet diameter by 11 feet long, with a working pressure of 130 pounds per square inch, and was made in the shipyard.

The vessel carries a gasoline launch, one lifeboat, and one dinghy, built in the shipyard.

The necessary work to put the vessel in commission, and which was done owing to the approach of winter, will be completed at the beginning of the new fiscal year.

7 GEORGE V, A. 1917

No. 59.—This vessel, named *Berthier*, is a twin-screw steel tug for staff purposes on the St. Lawrence ship channel service below Quebec, of the following dimensions:—Length B.P., 120 feet 0 inches; length O.A., 130 feet 0 inches; breadth moulded 24 feet 0 inches; depth, moulded 12 feet 0 inches; draught, mean, 8 feet 0 inches.

This vessel has been arranged with good accommodation for the staff engineers and also for the officers and crew.

The machinery consists of twin-screw compound surface-condensing engines having cylinders 14 inches and 28 inches diameter by 21-inch stroke, built by the New Burrell Johnson Co., of Yarmouth, N.S., supplied with steam from a Scotch marine boiler 15 feet 0 inches diameter by 11 feet 0 inches long, with a working pressure of 130 pounds per square inch. The boiler has been built by the shipyard. This vessel will be launched in early summer, 1916.

No. 60.—This vessel, named *Argenteuil*, is a single-screw steel steamer for buoy service on the Ottawa river, and is of the following dimensions:—Length O.A., 100 feet; breadth moulded, 21 feet; depth moulded, 9 feet; draught, loaded, 5½ feet.

This vessel was originally intended to be composite-built, but it was found to be possible on the designed draught to have a complete steel hull with a sheathing of British Columbia fir on bottom and bilges as a protection against boulders in the shallow waters where she will be sometimes working.

The steel was taken from the shipyard stock, and work was commenced on the hull in July, 1915, which will be ready to launch early in the summer of 1916.

The machinery consists of one set of compound jet-condensing engines supplied by Polsons Ltd., Toronto, having cylinders 10 inches and 20 inches diameter by 14-inch stroke, supplied with steam from a Scotch marine boiler 9 feet 6 inches diameter by 10 feet 0 inches long, having a working pressure of 130 pounds per square inch, which has been made in the shipyard. A derrick and winch for handling buoys up to 6 tons weight will be fitted.

No. 62.—This vessel is a composite, single-screw steamer for the Department of Naval Service for use of the oyster fisheries, of the following dimensions: Length B.P., 77 feet 0 inches; length, O.A., 85 feet 0 inches; breadth moulded, 18 feet 0 inches; depth, moulded 7 feet 0 inches; draught, 4 feet 9 inches.

This vessel is constructed with steel framing and plank of rock elm, oak, and British Columbia fir.

There is accommodation for a crew of six, and the vessel is fitted with a steam trawl winch and gear for use in the oyster fisheries.

Work was begun towards the end of January, 1916, and the vessel should be ready to launch by the beginning of June.

The machinery consists of one set of compound surface-condensing engines, having cylinders 10 inches and 20 inches diameter, by 12-inch stroke, built by John Inglis Co., Toronto. The boiler is 8 feet 6 inches diameter by 8 feet 9 inches long, with a working pressure of 120 pounds per square inch, and will be built in the shipyard.

The vessel would have been ready by the end of May, 1916, but owing to delays in delivery of materials owing to the present war conditions, delivery will be a little later.

No. 63.—This vessel, named *Coal Barge No. 6*, is a single-screw, steel coal barge for use on the St. Lawrence Ship channel, of the following dimensions: Length, B.P., 165 feet 0 inches; length O.A., 172 feet 0 inches; breadth moulded, 32 feet 0 inches; depth moulded, 13 feet 0 inches; draught, loaded, 10 feet 8½ inches; dead-weight, 750 tons.

The vessel has been built with five watertight bulkheads, double bottom in engine room to act as a reserve feed tank, having a capacity of 11 tons, and

SESSIONAL PAPER No. 21

a trimming tank forward. A fresh-water tank is fitted in the hold with a capacity of 5 tons.

There are two holds with large hatches and a revolving steam crane with a clam fitted between the hatches for handling coal, with a travelling shoot on each side of the vessel for the rapid coaling of the dredges.

The crane is also arranged for lifting weights up to 6 tons, so that the vessel can be used for buoy service in spring and fall if required.

The vessel was launched November 18, 1915; the engines and boilers put on board, and will be completed ready for service in May, 1916.

Nos. 64 to 67.—These constructions are four steel dumping scows of the following dimensions:—Length O A., 100 feet 0 inches; breadth moulded, 29 feet 0 inches; depth moulded, 10 feet 3 inches; capacity, 250 cubic yards.

They are fitted with hydraulic machinery similar to that fitted on the other steel scows. The first three were launched in the fall of 1915; the last one will be launched in the early summer, 1916.

During the winter the whole fleet of the ship channel has been overhauled as to navigation lights and brought up to the latest regulations in every respect.

The question of life-saving appliances was also looked into. All life-buoys and belts being tested, and replaced where found defective. The dimensions of the small boats are being looked into at the time of writing this report.

In addition to other work, the making of steel buoys for the Chief Engineer's department has been commenced during this year, and up to March 31, 1916, the following have been practically completed:—Four automatic whistling buoys, six bell buoy floats, 7 large gas and whistling buoys, one hundred steel spar buoys to replace wooden ones in use. These buoys were for various harbours on the Atlantic and Pacific coasts.

GENERAL.

Owing to war conditions, every economy possible was exercised in the carrying out of the work in the shipyard. No expensive alterations or improvements were made to the machinery or buildings.

The painting throughout the yard was also delayed for one season. The foundations of the office building and one or two others where necessary were overhauled and put in good order.

The shipyard launches *Margot*, *Buffalo*, and *Bronx* were maintained in good order and painted. The *Margot* has been employed by the Lights Department all season, and has done very good work for them.

All the fences were repaired where necessary, and whitewashed during the season.

The shipyard hauling-out ways were extensively repaired and otherwise kept in good order.

The force employed during the fiscal year varied from 1,075 in September, 1915, to 650 in March, 1916. The daily average being about 850.

On March 2 last, the shipyard carpenter shop, a wooden structure about 220 feet by 35 feet, one story high, was destroyed by fire. The cause of the fire is unknown. Work on the foundations for a new building was begun during end of fiscal year.

The financial statement shows the total amount expended on the shipyard and ship channel to have been \$1,530,642.10.

I have the honour to be, sir,

Yout obedient servant,

W. S. JACKSON,

Superintendent of Shipyard.

GOVERNMENT SHIPYARD, SOREL.—Statement of Revenue and Expenditure for the Fiscal Year 1915-16.

Year.	Amount.	Year.	Amount.
1916	\$ cts.	1916.	\$ cts.
March 31 To Appropriation for river St. Lawrence Ship channel actually expended \$981,761 64		March 31 By Operating dredging fleet . . \$976,622 03	
Appropriation for maintenance of Sorel Shipyard, actually expended. 36,508 02		Construction for dredging fleet 25,198 71	\$1,001,820 74
Appropriation for improvements to Shipyard, actually expended. 10,248 53		Maintenance of Sorel Shipyard	36,508 02
Appropriation for water levels investigation re river St. Lawrence, actually expended. 24,469 64		Improvements to Sorel Shipyard.	10,248 53
		Water levels investigation re river St. Lawrence.	24,629 95
			1,073,207 24
Appropriation for improvements to dredging plant.		Improvements to dredging plant:	
Construction No. 59, twin-screw steel tug \$ 46,185 81	1,052,987 83	Construction No. 59, twin screw steel tug.	\$ 46,185 81
Construction No. 63, self-propelling steel coal barge No. 6 90,967 08		Construction No. 63, self-propelling steel coal barge No. 6	90,967 08
Construction No. 64-7, four 250 cu. yd. steel dumping scows. 35,264 90		Construction No. 64-7, four 250 cu.-yd. steel dumping scows.	35,264 90
			172,417 79
Department of Naval Service:		Department of Naval Service:	
Construction No. 54, fisheries patrol steamer <i>Bradbury</i> for lake Win'peg \$ 57,666 98	172,417 79	Construction No. 57, fisheries patrol steamer <i>Bradbury</i> for lake W'peg. \$	50,552 13
Construction No. 62, oyster steamer. 772 90		Construction No. 62, oyster steamer	16,046 91
			66,599 04
Construction No. 57, steamer for testing and sweeping River St. Lawrence Ship channel 57,839 88		Construction No. 57, steamer for testing and sweeping River St. Lawrence Ship channel	86,561 09
Construction No. 60, single screw buoy steamer for service on Ottawa River 23,759 35		Construction No. 60, single screw buoy steamer for service on Ottawa river	23,759 35
Reconstruction of hopper barge No. 2 22,024 62		Reconstruction of hopper No. 2 at Collingwood, Ont.	22,024 62
" new ice breaker <i>J. D. Hazen</i> 400 00		" new ice breaker <i>J. D. Hazen</i> —Canadian Vickers, Ltd., Montreal.	400 00
" dredge No. 16 1,313 00		" Dredge No. 16, Canadian Vickers, Montreal	1,313 00
Department of Public Works 1,834 50		Department of Public Works, repairs and supplies to dredges, tugs, etc.	3,155 67
Department of Railways and Canals 13 99		Department of Railways and Canals.	13 99
Montreal District Agency 12,646 48		Montreal District Agency.	12,646 43
Chief Engineer's branch of Marine and Fisheries. 13,977 18		Chief Engineer's branch of Marine and Fisheries	13,977 18
Signal service 3,102 18		Signal Service	3,102 18
Parry Sound Agency 44 34		Parry Sound Agency	44 34
Lightship <i>Barrington</i> 1,205 84		Lightship <i>Barrington</i>	1,205 84
Quebec Harbour Commissioners 555 61		Quebec Harbour Commissioners.	555 61

SESSIONAL PAPER No. 21

C G. S. Acetylene	\$ 1,398 55	C G. S. Acetylene.	\$ 1,398 55
" Arctic	196 18	" Arctic	196 18
" Arammore	48 90	" Arammore	48 90
" Bellechasse	6,745 85	" Bellechasse	6,745 85
" Dollard	4,715 69	" Bradbury	41 41
" Frontenac	8,849 20	" Dollard	4,715 69
" Lady Grey	13,390 51	" Frontenac	8,849 20
" Maggie May	131 17	" Lady Grey	13,390 51
" Montcalm	1,765 83	" Maggie May	131 17
" Reserve	2,856 00	" Montcalm	1,765 83
" Scout	82 08	" Reserve	2,856 00
" Shamrock	5,420 38	" Scout	82 08
" Verchères	3,307 36	" Shamrock	5,420 38
		" Verchères	3,307 36
Canada Steamship Lines, Ltd.	48,907 70	Canada Steamship Lines, Ltd.	48,951 98
Sincennes, McNaughton Line, Ltd.	252 31	Sincennes, McNaughton Lines, Ltd.	252 31
Leclaire & Fils	15 15	Leclaire & Fils	15 18
Beauchemin & Fils, Ltd.	283 86	Beauchemin & Fils, Ltd.	283 86
J. P. Sherry	24 13	J. P. Sherry	24 13
The Metallurgic Enterprises Co., Ltd.	84 74	The Metallurgic Enterprises Co., Ltd.	84 74
C. O. Paradis, Ltd.	34 77	C. O. Paradis, Ltd.	34 77
The Patent Grates, Ltd.	9 35	The Patent Grates, Ltd.	9 35
Petty sales.	2 41		2 41
Scrap sales.	56 54		
Stores and materials	5,110 08		
	25,177 35		
	1,530,642 10		1,530,642 10

LOUIS LECOUTURE,
Accountant.

W. S. JACKSON,
Superintendent of Shipyard.

	Fuel.	Wages.	Board.	Supplies.	Main- tenance and Repairs.	Proportion of General Expenditure.	Total for each Vessel.	(Grand total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
<i>Operating Expenses of Dredging Fleet—River St. Lawrence Ship Channel.</i>								
Dredge No. 1	6,659 65	9,071 25	2,881 40	4,538 32	15,907 48	3,260 71	42,318 79	
Tug Varennes	4,521 28	4,964 36	1,893 84	1,307 49	1,575 90	1,190 71	15,453 52	
Dredge No. 2	7,361 57	9,231 23	3,088 49	3,539 08	9,912 32	2,766 04	35,898 73	
Tug Chambly	2,706 83	4,782 91	1,811 75	725 89	1,125 51	931 09	12,084 04	
Dredge No. 3	5,522 00	9,597 77	3,144 71	3,163 79	14,020 95	3,204 87	41,594 09	
Tug Emilia	2,498 17	4,239 64	1,576 86	663 74	2,031 94	919 18	11,929 49	
Dredge No. 4	6,350 47	9,299 66	3,093 21	5,198 20	10,324 36	2,860 64	37,126 49	
Tug Harville	4,368 15	4,995 39	1,882 62	707 93	1,850 11	1,152 42	14,956 60	
Dredge No. 5	11,385 34	10,092 16	3,281 96	4,243 29	11,741 68	3,401 50	44,145 93	
Tug Lac St. Pierre	4,351 77	4,857 30	1,830 96	1,180 43	1,967 87	1,184 49	15,372 82	
Dredge No. 6	6,841 99	8,826 99	2,892 88	4,367 19	14,831 38	3,152 40	40,913 03	
Tug Lanoraie	2,148 32	4,269 13	1,596 06	867 12	987 81	823 85	10,692 29	
Dredge No. 7	30,321 35	16,546 75	5,111 29	7,202 04	24,338 32	6,972 54	90,492 29	
Tug Loibinière	3,723 63	4,964 04	1,926 34	1,036 63	2,861 70	1,211 54	15,723 88	
Tug Carmelia	2,640 87	2,749 06	960 80	624 67	2,637 40	802 51	10,415 29	
Dredge No. 8	24,776 54	17,544 12	5,241 82	1,339 83	19,679 93	5,725 50	74,307 74	
Dredge No. 9	17,594 54	14,304 29	4,071 05	1,590 60	17,331 18	4,582 56	59,474 20	
Tug James Howden	3,725 07	5,264 07	2,379 95	1,097 82	2,914 48	1,284 10	16,665 49	
Dredge No. 10	7,049 51	9,379 15	2,721 95	2,828 60	9,788 18	2,652 06	34,419 45	
Tug Contrecoeur	4,029 77	5,345 46	2,093 87	2,272 97	1,938 67	1,309 09	16,989 83	
Dredge No. 11	7,987 97	10,661 92	3,017 26	2,950 13	9,605 45	2,857 04	37,079 77	
Tug Deschailons	6,237 81	5,722 00	2,253 41	2,077 06	5,096 94	1,785 48	23,172 70	
Dredge No. 12	10,198 35	9,937 35	3,377 66	3,380 97	7,898 12	2,904 60	37,696 97	
Tug Laviolette	4,336 27	4,980 97	1,874 14	1,043 23	1,045 61	1,108 68	14,388 90	
Dredge No. 13	12,066 77	9,849 13	3,406 79	3,180 63	7,373 01	2,995 09	38,871 42	
Tug Lavallrie	7,219 37	4,973 95	1,917 52	1,569 15	1,272 47	1,415 25	18,367 71	
Dredge No. 14	10,411 23	11,097 67	3,485 81	2,512 42	9,642 59	3,101 40	40,251 12	
Tug Beancour	5,474 65	5,701 75	2,188 03	1,838 94	2,059 58	1,441 17	18,704 12	
Dredge No. 15	10,520 83	11,038 15	3,533 01	2,291 91	9,607 67	3,088 19	40,079 76	
Tug Portneuf	2,491 61	4,927 14	1,906 94	1,050 69	1,156 89	962 84	12,496 11	
<i>Fleet Generally.</i>								
Tug De Louis	2,912 91	5,544 76	1,894 11	1,405 55	19,25 31	1,142 28	14,824 95	
Tug Jesse Hume	3,246 62	2,900 23	954 11	505 56	717 76	694 94	9,019 22	
Stone lifter No. 3	199 50	1,297 00	380 13	409 40	1,153 30	287 12	3,726 45	
" " No. 4	403 75	1,565 21	442 05	285 61	945 31	304 04	3,945 97	

APPENDIX No. 5.

STATEMENT of Expenditure and Revenue, Marine Department, 1915-16.

Service.	Grant.	Expenditure.	Grant not used.
	\$ cts.	\$ cts.	\$ cts.
Ocean and River service—			
Dominion steamers and icebreakers.....	1,215,082 98	1,124,708 21	374 77
Examination of masters and mates.....	165,000 00	13,828 13	2,671 87
Investigation into wrecks.....	18,400 00	10,221 72	8,178 28
Schools of navigation.....	8,000 00	4,067 97	3,932 03
Registration of shipping.....	3,000 00	1,308 83	1,691 17
Removal of obstructions.....	20,000 00	1,108 77	18,891 23
Winter Mail service.....	11,000 00	11,000 03*	
Cattle Inspection.....	5,000 00	2,426 12	2,573 88
Wrecking plants.....	45,000 00	45,000 00	
Unforeseen expenses.....	5,000 00	247 74	4,752 26
Public Works (chargeable to capital)—			
Ship channel.....	1,037,000 00	981,761 64	55,238 36
Dredging plant.....	871,000 00	76,077 66	103,922 34
New icebreaker, <i>St. Lawrence</i>	500,000 00	101,690 09	398,309 91
New sweeping and testing steamer.....	90,000 00	86,561 09	3,438 91
Lighthouse and Coast service—			
Agencies rents and contingencies.....	150,000 00	143,880 85	6,119 15
Salaries and allowances to lightkeepers.....	450,000 00	449,961 05	38 95
Maintenance and repairs to lighthouses.....	750,000 00	604,625 18	145,374 82
Construction of lighthouses.....	750,000 00	564,661 65	185,335 35
Signal service.....	60,000 00	57,847 86	2,152 14
Administration of pilotage.....	56,300 00	41,580 29	14,719 71
Maintenance and repairs to wharves.....	10,000 00	8,241 21	1,758 79
Breaking ice in Lake Superior.....	40,000 00	30,600 00	9,400 00
Repairs to maritime road.....	1,000 00	999 69	0 31
Allowance to Madame Lachance.....	2,000 00	2,000 00	
Pensions to retired pilots.....	8,775 00	8,558 33	216 67
Telephones, aids to navigation.....	5,000 00	1 50	4,998 50
New steamship to replace <i>Scout</i>	17,640 00	14,377 30	3,262 70
“ “ <i>Maisonneuve</i>	30,000 00	10,021 17	19,978 83
“ “ <i>Eureka</i>	110,000 00		100,000 00
Allowance to harbourmaster, Amherstburg	400 00	400 00	
Scientific institutions—			
Meteorological service	192,373 00	172,389 74	19,983 26
Marine Hospitals—			
Marine hospitals.....	75,000 00	64,950 36	10,049 64
Shipwrecked and distressed seamen	3,000 00	1,790 44	1,209 56
Steamboat inspection—			
Steamboat inspection	83,265 00	64,884 01	18,380 99
			1,146,954 38
Less overdraft			0 03
Total.....	6,539,735 98	5,392,781 63	1,146,954 35
* Grant exceeded by 3 cents.			
Civil government salaries	209,100 00	205,496 46	3,603 54
Contingencies.....	49,000 00	23,332 79	25,667 21
Total.....	258,100 00	228,829 25	29,270 75
Recapitulation of services—			
Ocean and river service.....	1,256,982 98	1,213,917 52	43,065 46
Public Works (capital).....	2,498,000 00	1,937,090 48	560,909 52
Lighthouse and coast service	2,431,115 00	1,937,759 08	493,355 92
Scientific institutions.....	192 373 00	172,389 74	19,983 26
Marine hospitals.....	78,000 00	66,740 80	11,259 20
Steamboat inspection.....	83,265 00	64,884 01	18,380 99
Civil government salaries.....	209,100 00	205,496 46	3,603 54
Contingencies.....	49,000 00	23,332 79	25,667 21
Total	6,797,835 98	5,621,610 88	1,176,225 10

EXPENDITURE FOR FISCAL YEAR 1915-1916

SESSIONAL PAPER No. 21

STATEMENT of Revenue, Department of Marine, for fiscal year ending 31st March, 1916.

	Gross.	Refunds.	Net.
	\$ cts.	\$ cts.	\$ cts.
Piers and wharves.....	56,678 57	417 17	56,261 40
Harbours	1,563 10	..	1,563 10
DOMINION STEAMERS.			
<i>Champlain.</i>			
Passengers, \$5,741.51; freight, \$1,674.42; meals, \$156.70; sale of coal, \$35.89; War tax, \$1.80.....	7,610 12		
<i>Minto.</i>			
Freight, \$5,105.36; passengers, \$1,383.25; meals, \$54.80 ;berths, \$225.00; expressage, \$172.05.....	6,940 46		
<i>Stanley.</i>			
Freight, \$6,108.99; passengers, \$2,896.25; meals, \$122.50; berths, \$531.00; expressage, \$619.01; War tax, \$18.95.....	10,296 70		
<i>Montcalm.</i>			
Freight, \$507.82; passengers, \$72.50.....	580 32		
<i>Prince Edward Island.</i>			
Freight, \$6,656.48; passengers, \$2,377.75; meals, \$48.20; express, \$436.65; War tax, \$44.70.....	9,563 78		
Winter mail service.....	79 50		
Decayed pilots' fund.....	5,769 50	100 00	35,070 88
Pilots' expense fund	10 00		5,669 50
Steamboat inspection	3,677 12		10 00
Steamboat engineers' fees	1,415 00		
Sick mariners' fund.....	72,663 80	118 15	5,092 12
Signal service dues	643 00		72,545 65
Fines and forfeitures	50 00		643 00
Marine register fees	39 69		50 00
Examination, masters and mates.....	4,857 73	29 50	39 69
Casual revenue, sundries.....	282,969 13	3,290 87	4,828 23
	465,412 52	3,955,69	279,678 26
			461,456 83

NOTE.—The sum of \$19.15, a refund on an advance made to J. A. Rodd in 1914-15, was inadvertently credited to the Department of Naval Service in 1915-16 instead of to this Department.

STATEMENT of Sick Mariners' Dues collected.

Name of Port.	Collections.	Name of Port.	Collections.
	\$ cts.		\$ cts.
<i>Nova Scotia.</i>		<i>New Brunswick.</i>	
Amherst	210 45	Bathurst	171 54
Annapolis Royal	29 77	Campbellton	347 06
Antigonish	0 21	Chatham	794 79
Arichat	26 24	Dalhousie	644 00
Baddeck	92 68	Fredericton	53 14
Barrington	8 76	Moncton	569 32
Bridgewater	199 40	Newcastle	354 59
Canso	35 11	Sackville	24 60
Digby	100 97	St. Andrews	50 78
Halifax	11,519 66	St. John	10,823 20
Kentville	23 18	St. Stephens	70 77
Liverpool.....	139 27		
Lockeport	14 14		13,903 79
Lunenburg	269 69		
North Sydney	1,329 35	<i>British Columbia.</i>	
Parrsboro	451 03	Nanaimo	1,765 10
Pictou	643 02	New Westminster	40 71
Port Hawkesbury	32 74	Prince Rupert	1,023 27
Port Hood	8 08	Vancouver	4,201 52
Shelburne	55 63	Victoria	7,086 47
Sydney	4,708 77		
Truro	3 83		14,117 07
Weymouth	101 38		
Windsor	1,134 17	<i>Prince Edward Island.</i>	
Yarmouth	201 44	Charlottetown.....	386 94
	21,338 97	Summerside	140 85
<i>Quebec.</i>			527 79
Gaspe	213 24		
Montreal	15,909 00	<i>RECAPITULATION.</i>	
Paspébiac.....	225 48	Quebec	22,776 18
Perce	12 45	New Brunswick	13,903 79
Quebec	4,823 50	Nova Scotia	21,338 97
Rimouski	235 07	British Columbia	14,117 07
St. John's	1,277 48	Prince Edward Island	527 79
Sorel	1 80		72,663 80
Three Rivers	78 16		
	22,776 18		

STEAMBOAT INSPECTION DUES.

<i>Ontario.</i>		<i>British Columbia.</i>	
Port William	45 68	Vancouver	270 32
		Victoria	752 00
<i>Quebec.</i>			1,022 32
Quebec.....	144 00		
<i>Nova Scotia.</i>		<i>New Brunswick.</i>	
Halifax	2,040 16	St. John	116 56
North Sydney	308 40		
	2,348 56	<i>RECAPITULATION.</i>	
		Ontario	45 68
		Quebec.....	144 00
		New Brunswick.....	116 56
		Nova Scotia	2,348 56
		British Columbia.....	1,022 32
			3,677 12

SESSIONAL PAPER No. 21

STATEMENT of Sick Mariners' Dues collected—Continued.

MARINE REGISTER FEES.

Name of Port.	Collections.	Name of Port.	Collection.
	\$ cts.		\$ cts.
<i>Ontario.</i>		<i>Manitoba.</i>	
Midland.....	0 20	Winnipeg.....	1 40
Ottawa .. .	0 40	<i>British Columbia.</i>	
Pictou .. .	2 84	Victoria .. .	5 60
Toronto.....	2 80	<i>Prince Edward Island.</i>	
	6 24	Charlottetown.....	1 00
<i>Quebec.</i>		RECAPITULATION.	
Montreal .. .	10 00	Ontario.....	6 24
Quebec.....	5 85	Quebec .. .	15 85
	15 85	Nova Scotia.....	9 60
<i>Nova Scotia.</i>		Manitoba.....	1 40
Arichat .. .	0 20	British Columbia .. .	5 60
Canso .. .	0 20	Prince Edward Island .. .	1 00
Halifax .. .	2 00		39 69
Liverpool .. .	0 20		
Lunenburg .. .	6 20		
Shelburne .. .	0 20		
Yarmouth.....	0 60		
	9 60		

SIGNAL STATION DUES.

Name of Port.	Collection.
	\$ cts.
<i>NOVA SCOTIA.</i>	
Halifax.....	643 00

LIST of Harbours and Harbour Masters.

Name of Port.	Harbour Master.	Date of Appointment.	Gross Collections.	Remuneration.	Net.
			\$ cts.	\$ cts.	\$ cts.
Ontario.					
Amherstburg	Geo. Glett	May 13, 1912..	Nil.	200 00	Nil.
Bronte	T. Joyce	Dec 17, 1912..	4 50	200 00	"
Byng Inlet North	H. L. Grasswell	Feb. 20, 1912..	Nil.	200 00	"
Collingwood	R. Hughes	Nov 25, 1913..	46 00	300 00	"
Depot Harbour	A. F. Butterworth	April 14, 1913..	Nil.	200 00	"
Fort William	S. G. Seager	Aug. 1, 1914	258 50	600 00	"
French River	D. Udy.....	Mar. 25, 1912	Nil.	200 00	"
Godfrich	M. McDonald.....	April 17, 1912..	30 00	300 00	"
Little Current	W. D. Ritchie	April 5, 1912..	95 50	200 00	"
Meaford	W. Cooke	July 1, 1913	24 00	200 00	"
Midland	John White	July 13, 1897..	87 00	300 00	"
Owen Sound	W. H. Smith.....	April 25, 1912..	67 00	200 00	"
Oshawa	W. T. Henry.....	Aug. 10, 1904..	Nil.	300 00	"
Parry Sound	Lavigne, T.	Aug. 14, 1915..	Nil.	300 00	"
Port Cartwright	M. Dismore	Mar 10, 1916..	7 00	200 00	"
Port Arthur	B. Guenard	May 21, 1897..	189 00	300 00	"
Port McNicoll	T. Nottingham	May 1, 1911..	27 00	200 00	"
Port Stanley	T. R Dale.....	Aug. 13, 1912..	9 00	200 00	"
Rondeau.....	J. Claus.....	Nov. 27, 1913..	29 50	100 00	"
Sault Ste. Marie	S. L. Penberwood.	May 2, 1912..	35 00	300 00	"
Southampton	W. H. J. Huston	Oct 1882..	8 50	100 00	"
Sarnia	R. McAdams	May 3, 1886..	Nil.	300 00	"
Trenton	J. Gault	May 13, 1912..	22 25	200 00	"
Whitby	J. Watson, Jr	June 2, 1912	31 50	200 00	"
Windsor	W. McCulloch.....				
Quebec.					
Amherst	J. Cassidy	Sept. 2, 1878..		200 00	
Antoine Gascons	J. Marrant	June 28, 1905..	Nil.	100 00	
Bathurst	L. Thibault	Dec. 13, 1905..		200 00	
Bic	L. Pellavance	April 25, 1912..	38 00	200 00	
Bonaventure	L. Arsenault	April 24, 1913..	17 50	100 00	
Carleton	W. Allard.....	Feb. 12, 1916..		200 00	
Cape Cove	R. J. Lenfesty	June 7, 1912..		200 00	
Caplan	L. Bourdages	Mar. 20, 1907..		100 00	
Chicoutimi	A. Sturton	June 8, 1886..		200 00	
Escoumains.....	Vacant.				
Grand Entry	A. Cyr.	July 10, 1907..		200 00	
Gaspé	L. G. Eden	April 3, 1889	140 00	500 00	
House Harbour	C. Larabee	Dec. 10, 1896..	27 00	200 00	
Maria	A. Cyr.	Mar. 29, 1905..	Nil.	100 00	
Matane	L. L. Vesque	Jan. 20, 1915..	58 00	200 00	
Barre-leis Malabar	J. Thompson	May 27, 1913..	10 00	200 00	
Metis	J. W. Ferguson	May 10, 1906..		200 00	
New Carlisle	J. Chisholm	April 22, 1902..	1 00	200 00	
New Richmond	V. L. Blane	Mar. 17, 1915..		200 00	
Norville	J. Casey	Jan 3, 1903.	Nil.	200 00	
Oak Bay.	T. Harper	Jan. 12, 1904..	45 00	200 00	
Paspébiac	L. Castillon..	Mar 25, 1915..	20 00	150 00	
Peter	E. Donahue.	Oct. 10, 1903..	11 50	100 00	
Port Daniel	B. Langlois	Feb. 26, 1907..	20 50	200 00	
Rimouski	A. P. St. Laurent	May 31, 1896..	34 00	200 00	
Rivière du Loup	F. E. Gilbert.....	Oct. 5, 1902..	Nil.	100 00	
St. Godfrey.	J. Gruner	June 5, 1905..	Nil.	100 00	
St. Omer	A. Laviolette	Aug. 1, 1914.	12 00	200 00	
St. Thomas (Montmagny)...	R. Fournier.....	May 23, 1913	13 00	200 00	
St. Johns	G. H. Farrer.	Mar. 20, 1897..	543 00	600 00	
Sault au Mouton.....	Vacant.				
Sorel	Lavallée, P.	Feb. 5, 1912..	685 00	500 00	185 00
Trois Pistoles	O. Drapeau	Nov. 25, 1911		100 00	
Tadoussac.....	A. Gingras.....	June 6, 1906	Nil.	200 00	

SESSIONAL PAPER No. 21

List of Harbours and Harbour Masters—Continued

Name of Port.	Harbour Master.	Date of Appointment.	Gross Collections.	Remuneration.	Net.
			\$ cts.	\$ cts.	\$ cts.
<i>New Brunswick.</i>					
Alma.....	G. W. Parsons.....	Mar. 2, 1898.	59 30	100 00	
Bathurst.....	M. Daley.....	April 15, 1907..	60 50	200 00	
Black and Beaver Harbour.	E. W. Cross.....	Sept. 17, 1883.	17 50	100 00	.....
Buctouche.....	P. Smith.....	Dec. 9, 1915.			
Campbellton.....	W. W. Doherty.....	Oct. 24, 1912.	182 50	200 00	
Campobello	H. Calder.....	April 25, 1912..		100 00	
Cape Bald.....	J. L. Cormier.....	Aug. 19, 1911..		200 00	
Cape Tormentine.....	M. S. Treene.....	Mar. 13, 1901..		200 00	
Caraquet.....	J. Lenteigne.....	June 11, 1913.	5 00	150 00	
Chatham.....	R. J. Walls.....	July 13, 1898..	261 50	300 00	
	C. Brown (Deputy)....	May 29, 1912..			
Cocagne.....	J. T. Bourque.....	June 23, 1905..	Nil.	100 00	
Dalhousie.....	W. S. Smith.....	Mar. 19, 1888..	185 50	200 00	
Dipper Harbour.....	A. G. Thompson.....	July 3, 1915..	9 00	200 00	
Dorchester.....	J. Shea.....	Oct. 25, 1900.	5 00	200 00	
Fairhaven.....	A. Calder.....	July 30, 1901.	Nil.	200 00	
Grand Harbour.....	W. A. Ingalls.....	Dec. 11, 1915..		100 00	
Grand Manan (Gull North Channel).....	G. A. Johnson.....	April 27, 1904..	Nil.	100 00	
Harvey.....	W. Crocker.....	Dec. 25, 1915..	45 00	100 00	
Heron Channel.....	G. N. Taylor.....	Nov. 25, 1911..	25 00	200 00	
Hillsboro.....	J. Gallagher.....	June 26, 1912.	51 00	100 00	
Hopewell Cape.....	J. H. Christopher.....	April 13, 1898..	16 00	200 00	
Ledge St. Stephens.....	T. Holmes.....	Dec. 17, 1913.	1 00	100 00	
Letete.....	H. W. Harris.....	Feb. 16, 1906..	Nil.	100 00	
Little Shippigan.....	J. Beaudin.....	Oct. 27, 1906..		100 00	
Moncton.....	E. P. Cook.....	April 17, 1915.	7 00	200 00	
Musquash.....	J. McMulty.....	Sept. 28, 1896.	2 00	100 00	
Newcastle.....	J. Russell.....	June 27, 1904.	112 50	300 00	
North Head (Grand Manan.)	J. E. Gaskill.....	Mar. 20, 1907..	3 50	100 00	
Port Elgin and Baie Verte..	C. Trenholm.....	April 30, 1907..	5 00	200 00	
Pokemouche.....	M. Landry.....	May 13, 1901..		100 00	
Richibucto.....	J. A. Jardine.....	May 11, 1874..	25 00	200 00	
Sackville.....	E. Chase.....	May 11, 1904.		200 00	
Seal Cove.....	W. Russell.....	Feb. 22, 1913..	8 00	100 00	
St. Andrews.....	W. Clark.....	Dec. 23, 1911..	62 50	100 00	
St. George.....	A. Stewart.....	April 3, 1912.	58 50	100 00	
St. Stephen.....	A. McWha.....	July 9, 1914..		100 00	
St. Martin.....	A. Vaughan.....	Nov. 11, 1912.	48 00	100 00	
Shediac.....	J. M. Herbert.....	Sept. 9, 1914.	5 00	300 00	
Shippigan.....	C. Gionet.....	June 25, 1912..	8 50	100 00	
Tracadie.....	Vacant.....				
Waterside.....	I. H. Copp.....	Feb. 20, 1913..	1 00	100 00	
West Isles.....	B. Simpson.....	May 27, 1901..		200 00	
Whitehead.....	A. Cheney.....	April 19, 1907.	4 00	100 00	
<i>Nova Scotia.</i>					
Abbott's Harbour.....	Vacant.....				
Advocate.....	R. D. Atkinson.....	May 2, 1913..	9 00	100 00	
Amherst.....	Vacant.....				
Annapolis Royal.....	G. Cummings.....	April 17, 1915.		200 00	
Apple River.....	W. Green.....	May 24, 1911..		200 00	
Arichat.....	C. Herbin.....	Nov. 27, 1913..		200 00	
Barrington.....	R. R. Penney.....	June 8, 1914.		200 00	
Bayfield.....	D. Sutton.....	May 22, 1910.	Nil.	200 00	Nil.
Bay St. Lawrence.....	J. W. Fitzgerald.....	Dec. 22, 1910.		200 00	
Bear River.....	W. McFadden.....	Sept. 27, 1897.	11 00	100 00	
Belliveau's Cove.....	F. LeBlanc.....	Dec. 6, 1912.	9 50	200 00	
Big Harbour (Port Beirs)...	D. G. McKenzie.....	April 18, 1908.	Nil.	100 00	
Bridgewater.....	W. Oakes.....	Jan. 28, 1896.	155 50	200 00	
Big Bras d'Or.....	D. Carey.....	Feb. 12, 1912.	1 00	200 00	
Big Pong.....	Vacant.....				
Canning.....	F. A. McBride.....	Jan. 18, 1913..		200 00	

List of Harbours and Harbour Masters—Continued.

Name of Port.	Harbour Master.	Date of Appointment.	Gross Collections.	Remuneration.	Net.
<i>Nova Scotia—Con.</i>			\$ cts.	\$ cts.	\$ cts.
Cape Canso	G. Oliver	Feb. 14, 1905.	97 00	150 00	
Cape Negro.	A. D. Perry	May 18, 1881..	5 50	200 00	
Chebogue.	W. Jenkins	Sept. 28, 1912..	Nil.	200 00	
Chester.	D. Mills	Jan. 26, 1915..		100 00	
Cheticamp	F. Aucoin	April 15, 1876..	7 50	100 00	
Clark's Harbour	J. G. Nickerson	May 23, 1904..	14 50	200 00	
Clementsport	J. McCain.	Oct. 18, 1898..		150 00	
Descousse.	A. Langlois	Dec. 23, 1911..	9 00	100 00	
Digby...	H. Anderson	June 19, 1902..	47 00	200 00	
East Bay	D. McInnis	April 5, 1886..		100 00	
Fourchu	A. B. Hooper	April 25, 1912..		100 00	
Freeport	F. B. Prime	May 2, 1909..	10 00	200 00	
Gabarouse	G. Harris	Feb. 22, 1911		100 00	
Glasgow and C.B. Pier (Sydney)	A. McQuarrie	Oct. 30, 1880..	30 50	300 00	
Guysboro	T. O'Connor	April 2, 1913..		100 00	
Halifax	F. J. Rudolf...	May 13, 1910..	1,783 50	1,800 00	
Hall's Harbour	J. C. Watson	Nov. 16, 1912..	Nil.	100 00	
Hantsport	W. McCulloch.....	Jan. 17, 1892..	47 00	300 00	
Hubbard's Cove.....	N. C. McLean.....	Nov. 5, 1913..	6 00	200 00	
Ingonish, North Bay.....	A. McLean.....	April 21, 1910..	10 50	200 00	
Ingonish, South Bay.....	J. C. Williams.....	Nov. 25, 1912..		100 00	
Ingramport.....	F. Huntley	Jan. 19, 1907..	51 50	100 00	
International Pier, Sydney.	M. J. Neville.....	Oct. 30, 1880..	649 00	300 00	349 00
Isaacs Harbour	T. D. Cook.....	June 19, 1900..	21 50	100 00	
Jeddore	J. E. Jennox	Sept. 16, 1912..		100 00	
Joggins Mines	A. Brine	Jan. 2, 1913..	7 50	200 00	
Jordan Bay	F. Thorburn	May 11, 1901..		150 00	
Kelley Cove	S. Keddy	Oct. 3, 1914..		100 00	
Lahave	G. H. Zwicker...	Feb. 25, 1875..	13 00	300 00	
L'Ardoise.....	G. Burke.....	Aug. 29, 1884..	2 00	100 00	
Lingan	Vacant.				
Liscomb	I. Wilson	Feb. 20, 1900	20 00	200 00	
Gillis Point	Vacant.				
Little Bras d'Or	V. McLean	Sept. 23, 1907..	Nil.	100 00	
(McKay Pt. to Washabuck River).					
Little Bras d'Or Harbour...	J. M. LeBlanc.....	Oct. 9, 1909..	Nil.	200 00	
Little Glace Bay	E. D. Rigby....	May 8, 1884	6 00	200 00	
Little Narrows.....	M. Matheson.	Sept. 6, 1912..	Nil.	100 00	
Liverpool	Vacant		138 00	200 00	
Lockeport	G. J. Locke	April 2, 1906..	38 50	100 00	
Louisburg	J. McDonald.....	Aug. 1, 1914..	730 00	200 00	
" (Deputy).....	A. C. Beaton.	Sept. 11, 1915..		150 00	484 60
Lunenburg	H. Heckman.	Oct. 1, 1909..	168 50	200 00	
Mabou	W. F. Rankin	Feb. 18, 1915..	Nil.	100 00	
Mahone Bay	A. Hyson	Feb. 18, 1908..	21 50	200 00	
McNair's Cove	R. McEachern.....	Mar. 8, 1875..	Nil.	150 00	
McKinnon Harbour	D. Y. McNeil.	Oct. 9, 1909..		200 00	
Marble Mountain.....	S. McDonald.....	July 26, 1892..		200 00	
Margaretsville	I. C. Cleveland	Nov. 5, 1912..	5 50	100 00	
St. Margaret's Bay.....	H. C. Garrison.....	Dec. 14, 1901	2 50	100 00	
Margaree.	F. P. Chaisson.....	Mar. 6, 1909..	Nil.	100 00	
Marie Joseph.....	Chas. Dixon	Feb. 2, 1907..	1 50	100 00	
Metegomish	T. B. Olding...	Mar. 11, 1910..	Nil.	200 00	
Meteghan Harbour.....	J. McLair.....	Nov. 17, 1906..	16 50	100 00	
Meteghan River.....	Vacant.				
Musquodoboit.....	F. Williams	May 31, 1905..	3 50	100 00	
New Haven...	Vacant.				
Neils Harbour	R. Payne	July 15, 1905..	50 00	100 00	
Noel.	J. A. Hines	Dec. 29, 1914..		200 00	
Northport	Vacant.		5 50	100 00	
North Sydney	R. McDonald	Jan 9, 1915	870 50	600 00	270 50
North West Cove	A. Setter	May 22, 1912..	1 50	200 00	
Orangedale	J. A. Martin.....	July 3, 1914..	Nil.	100 00	

SESSIONAL PAPER No. 21

List of Harbours and Harbour Masters—Continued.

Name of Port.	Harbour Master.	Date of Appointment.	Gross Collections.	Remuneration.	Net.
			\$ cts.	\$ cts.	\$ cts.
<i>Nova Scotia—Con.</i>					
Parrsboro.....	W. R. Huntley	May 8, 1912	150 50	300 00	
Petit de Grat.....	E. Bois	Feb. 9, 1912	8 50	200 00	
Pictou.....	Commission				
Petite River Bridge.....	J. N. Parks....	April 27, 1888..		100 00	
Port George.....	Vacant.				
Port Greville.....	D. Graham.....	April 27, 1909.	23 50	200 00	
Port Hawkesbury.....	J. Iamey.....	June 2, 1909	106 00	200 00	
Port Hastings.....	G. L. McLean.....	Feb. 15, 1908	62 00	200 00	
Port Hood.....	J. H. Murphy.....	July 9, 1875	2 50	200 00	
Port Latour.....	W. Sholds	Feb. 18, 1898	3 00	200 00	
Port Lorne.....	F. Beardsley.....	June 9, 1907	1 50	200 00	
Port Maitland.....	J. W. Ramond.....	Feb. 20, 1914	2 20	200 00	
Port Morien.....	J. McDonald.....	Mar. 3, 1879	3 00	200 00	
Port Mulgrave.....	J. Moore.....	Jan. 20, 1912	22 50	200 00	
Port Medway.....	J. Hopkins	Feb. 13, 1903	15 00	200 00	
Port Wade.....	A. Holmes.....	Dec. 10, 1912	3 00	200 00	
Pubnico.....	P. Belliveau.....	Nov. 25, 1911	38 50	100 00	
Pugwash.....	P. Stewart.....	Mar. 16, 1912..	67 50	100 00	
Queensport.....	A. Carr	Feb. 20, 1914	16 00	100 00	
Riverport.....	A. Ritcey.....	Sept. 11, 1915	25 00	100 00	
River Bourgeois.....	E. C. Bouchie.....	April 9, 1886..	4 00	100 00	
River Hebert.....	W. Y. Tneal	July 24, 1905..	1 00	100 00	
River John.....	H. Campbell.....	June 1, 1891		100 00	
St. Annes Bay.....	D. McA-skill.....	May 2, 1913	24 00	200 00	
St. Marys River	S. E. Pride	Mar. 20, 1914	6 00	200 00	
St. Peters Harbour.	P. McNeil..	Sept. 17, 1883..	19 50	200 00	
St. Anns (Englishtown).	A. McLeod.....	April 16, 1909		200 00	
Sambro.....	H. W. Smith.....	Feb. 18, 1913	11 00	200 00	
Sanford	H. Bourgoyne.....	Feb. 18, 1915..	Nil.	100 00	
Sheet Harbour.....	Vacant.				
Shelburne.....	M. Jordan.....	May 13, 1912	157 00	200 00	
Ship Harbour	H. Siteman	Feb. 22, 1911	2 50	100 00	
Spencer's Island.....	B. McLellan	May 22, 1899..	12 00	100 00	
Tangier	A. Mason	July 19, 1912	2 50	200 00	
Tenny Cape	W. Stephen.....	Sept. 16, 1912..		200 00	
Tatamagouche	W. Reilly..	June 1, 1900	50	200 00	
Tidnish.....	R. B. Davidson..	Feb. 19, 1910	Nil.	100 00	
Tiverton.....	J. Blackford	April 3, 1900	3 50	100 00	
Torbay	I. Fougere.....	Aug. 25, 1903	10 50	200 00	
Tusket Wedge (Wedgeport).	H. A. LeBlanc.	Mar. 3, 1911	9 50	100 00	
Victoria Pier.....	Vacant.				
Wallace.....	J. D. Potton.....	Feb. 14, 1896	3 50	100 00	
West Arichat	L. Forest.....	May 25, 1910..		100 00	
Walton.....	J. W. Wein	Nov. 25, 1911	25 00	200 00	
West Bay.....	Vacant.				
West Port.....	W. B. Welch.....	Dec. 21, 1912..	35 50	200 00	
Weymouth.....	A. Beaton.....	Mar. 11, 1912	35 00	200 00	
Whitehead.....	L. Munroe	Feb. 8, 1909		200 00	
Whycocomagh.....	N. Matieson	July 6, 1909..		100 00	
Windsor	C. W. Baird	April 10, 1912..	136 50	300 00	
Wolfville	I. L. Franklyn.....	Aug. 16, 1901	4 50	100 00	
Woods Harbour.....	G. Nickerson	Nov. 29, 1913..	8 00	200 00	
Yarmouth	R. M. Ferguson.....	April 27, 1912..	152 00	250 00	
Washabuck (see Little Bras d Or).					
				\$ 1,104 10	
<i>Prince Edward Island.</i>					
Alberni.....	A. Kinch	July 19, 1912		200 00	
Bay Fortune....	J. R. Coffin.....	April 29, 1875		200 00	
Belle River.....	M. F. Riley....	Sept. 18, 1914		200 00	
Brudenell.....	J. A. Gordon	Oct. 26, 1905		200 00	
Cardigan River ..	D. J. McKenzie	June 14, 1913	Nil.	100 00	
Cove Head.....	M. Keilley	April 23, 1904		100 00	

List of Harbours and Harbour Masters—*Concluded.*

Name of Port.	Harbour Master.	Date of Appointment.	Gross Collections.	Remuneration.	Net.
<i>Prince Edward Island—Con.</i>			\$ cts.	\$ cts.	\$ cts.
Charlottetown	J. Ryan	May 3, 1912..	181 50	400 00	
Crapaud	W. Myers...	June 17, 1875	..	200 00	
Egmont Bay	Vacant.				
Georgetown	S. Hemphill	Dec. 17, 1912..	16 50	200 00	
Grand River.	I. L. Howlett	Aug. 26, 1912..		200 00	
Malpeque	J. Hickey.	May 6, 1915	Nil.	200 00	
Munnegash.	M. D. Lacy	June 30, 1914..	6 50	100 00	
Montague Bridge.	Vacant.				
Murray Harbour	G. Billard.....	Oct. 30, 1913..	4 50	200 00	
Murray River.	G. McLeod ..	Feb. 9, 1897..		200 00	
New London.	J. Dealney ..	April 28, 1914..	1 00	200 00	
Pugette	J. D. McDonald ..	Oct. 22, 1903..	Nil.	100 00	
Port Hill	W. C. Brown ..	June 20, 1898..	..	200 00	
Pownal	M. Haley.....	Mar. 30, 1897..		100 00	
Rustico	J. Gallant.	June 9, 1914	1 00	200 00	
St. Peter's Bay	G. Barry	May 3, 1901		200 00	
Souris	J. Tierney	May 15, 1905	33 00	200 00	
Summerside	J. Matheson.	Feb. 8, 1907..	51 00	200 00	
Tignish.	I. E. Richard	Aug. 16, 1912..		100 00	
Grand Tracadie	J. McAulay	April 18, 1910..		200 00	
Vernon River Bridge.	J. Imlay.	Oct. 9, 1884..	Nil.	200 00	
Wood Island	J. Young.	May 22, 1899..	0 50	100 00	
<i>British Columbia.</i>					
Chenamus.	L. G. Hill.....	April 24, 1906..	15 00	200 00	
Comox.	A. S. Abrams	June 12, 1914..	311 00	200 00	111 00
Ladysmith.....	L. E. Lowe.....	June 26, 1912..	54 00	200 00	
Nanaimo	J. Knarston	Oct. 26, 1905..	588 50	500 00	88 50
New Westminster	W. B. Shales	Feb. 15, 1908..	239 50	400 00	
Sung Cove	W. J. Davies.	July 19, 1911		200 00	
Victoria and Esquimalt	C. E. Clarke.....	Nov. 3, 1894..	679 50	600 00	79 50
Prince Rupert	E. M. Crocker	Mar. 16, 1912..	250 00	600 00	
					279 00

SESSIONAL PAPER No. 21

LIST of Wharves and Wharfingers.

Locality.	Wharfinger.	Date of Appointment.	Remuneration allowed.	Amount forwarded to Department
			p c.	\$ cts.
<i>Ontario.</i>				
Arnprior.....	Vacant.			
Barry's Bay.....	S. Smith.....	Aug. 25, 1905.	25	
Baysville.....	J. D. Smith.....	Sept. 25, 1906.	25	
Blind River.....	W. H. McGauley.....	April 14, 1908..	50	414 60
Bracebridge.....				
Brighton.....	W. S. Strong.....	Mar. 7, 1913.	25	48 76
Bronte.....	T. Joyce.....	Dec. 17, 1912.	25	23 25
Bruce Mines.....	W. Flemming.....	April 15, 1902..	50	92 94
Burks Falls.....	A. Collins.....	Feb. 8, 1907.	25	
Chute à Blondeau.....	O. Cousineau.....	May 28, 1909..	40	93 06
Cobourg.....	Vacant.			
Cockburn Island.....	D. J. McLeod.....	June 29, 1910..	50	37 12
Cooks Bay.....	C. Kent.....	May 28, 1909.	50	
Depot Harbour.....	W. H. Hoppins.....	May 8, 1907.	25	
Echo Bay.....	T. H. McWhatters.....	June 5, 1912.	25	
Goderich.....	M. McDonald.....	Mar. 7, 1913.	25	689 99
Haileybury.....	R. Budd.....	May 25, 1914..	25	
Hamilton.....	Vacant.			
Hilton.....	P. J. Brown.....	Mar. 25, 1912.	50	170 73
Honora Bay.....	G. E. Hawke.....	May 12, 1909.	25	
Huntsville.....	Vacant.			70 00
Kingsville.....	W. H. Black.....	Aug. 1, 1902.	25	191 02
Lakeport.....	John Donerty.....	Oct. 17, 1914.	25	
Leamington.....	J. E. Johnson.....	May 11, 1906.	25	332 69
Lions Head.....	Chas. Knapp.....	Feb. 6, 1906..	25	
L'Orignal.....	O. Dubois (temporary)...	July 25, 1913.	50	48 90
Magnetawan.....	C. Ross.....	April 6, 1910.	25	
Michipicoten River.....	Geo. Reed.....	Nov. 27, 1913..	25	56 23
Midland.....	Under lease			408 32
Morpeth.....	Vacant.			
North Bay.....	Jas. Kennedy.....	Dec. 16, 1915.	50	
Oshawa.....	W. T. Henry.....	Aug. 10, 1904.	\$400 per annum	
Owen Sound.....	Vacant.			
Pembroke.....	T. Lowe.....	Mar. 7, 1913..	\$200 per annum	50 00
Peterboro.....	Vacant.			
Point Pelee.....	Vacant.			507 45
Pelee Island (Scudder)	H. K. Quick.....	May 21, 1915.	25	157 82
Port Finlay.....	John Coward.....	April 7, 1915.	50	23 75
Portland.....	A. Gallagher.....	Sept. 25, 1915.	25	
Port Rowan.....	Vacant.			
Port Whitby.....	John Watson, jr.....	Sept. 30, 1912.	25	71 55
Providence Bay.....	E. Pattison.....	Feb. 19, 1915.	50	263 15
Richards Landing.....	J. Burnside.....	Mar. 16, 1912.	50	
Rondeau.....	J. Claus.....	Nov. 27, 1913..	25	
Rosseau.....	S. A. Foote.....	April 17, 1912..	50	141 02
Rosspoint.....	Vacant.			
Sault Ste. Marie.....	G. A. Boyd.....	April 9, 1897.	\$100 per month	
Sheguiandah.....	W. Stevens.....	Nov. 8, 1910..	25	15 32
Silver Centre.....	H. Pickering.....	July 17, 1911.	25	
Southampton.....	H. Harmer.....	May 24, 1912..	25	20 48
South Lancaster.....	J. Munroe.....	Sept. 19, 1912..	25	5 00
Summerstown.....	A. Bonneville.....	May 25, 1910..	25	
Tenby Bay.....	P. Jacob.....	May 22, 1912..	25	
Thames River.....	Vacant.			
Thessalon.....	W. H. Hill.....	Feb. 29, 1912.	50	144 55
Treadwell.....	H. Duschene.....	April 24, 1914.	50	66 45
Wendover.....	M. St. Pierre.....	Feb. 20, 1913..	50	50 65
Wheatley.....	Vacant.			
Warton.....	E. Shackleton.....	Sept. 12, 1913..	25	
Windermere.....	Leased.	June 30, 1915.		66 30
Windsor.....	Isaac Watts.....	Mar. 18, 1916..	25	
			Total.....	4,260 10

List of Wharves and Wharfingers—Continued.

Locality.	Wharfinger.	Date of Appointment.	Remuneration allowed.	Amount forwarded to Department
			p.c.	\$ cts.
<i>Montreal District.</i>				
Agnes (St. Agnes).....	L. A. Roy.....	Nov. 27, 1891.	25	
Ancers.....	Vacant			15 00
Aylmer.....	Vacant			
Boucherville.....	N. Sicotte.....	April 17, 1913	25	
Cap de la Madeleine.....	Vacant.			
Cascades.....	Vacant			
Cedars.....	C. Laboursadiere.....	May 27, 1907	50	
Coteau du Lac.....	A. St. Amour	July 4, 1912..	50	
Coteau Landing.....	N. Bernault	June 29, 1910..	50	14 35
Desjardins.....	P. Desjardins.....	Mar. 31, 1906	25	
East Templeton.....	L. Campeau.....	May 13, 1912..	50	30 65
Fassett.....	F. Thomas	April 28, 1914	50	28 80
Graham.....	A. Bertrand	Feb. 22, 1911	50	24 32
Groove Point.....	F. Ranger	July 16, 1902..	25	
Hudson.....	C. Bertrand.....	June 25, 1912	50	50 23
Ile Perrot (North).....	O. Legault	May 30, 1910	25	62 18
Ile Perrot (South)....	R. Daoust (acting).....	Aug. 8, 1908..	50	
Knowlton Landing.....	L. Knowlton	Mar. 23, 1910	25	33 75
Lacelle.....	R. J. Robinson.	Mar. 8, 1894	25	3 60
Lake Megantic.....	Vacant			
Magog.....	D. E. Peters.....	June 10, 1906	50	74 32
Masson.....	O. Daoust	May 2, 1913	\$100 per annum	
Montebello.....	E. Major.....	July 3, 1915		132 08
Papineauville.....	A. Chabot.....	April 10, 1912	50	103 90
Peel Head Bay.....	H. Lake.	Oct. 21, 1914	25	
Pointe à Valois.....	L. Castonguay.....	Oct. 20, 1897	50 00	21 72
Pointe aux Trembles.....	Under Montreal Harbour Comm.			
Pointe Fortune.....	Wm. Brown.....	April 26, 1910	25	8 67
Port Lewis.....	S. Carson	Dec. 17, 1912..	25	3 75
Rigaud.....	O. Mallette	Oct. 14, 1907	50	69 78
Sabrevois.....	Vacant			
Sorel.....	G. Gariépy	July 23, 1915..	25% up to \$300	
Sorel.....	For use of Shipyard fleet only			88 65
St. Anicet.....	M. Cote...	Aug. 30, 1913..	50	10 00
St. Anne de Bellevue.....	M. C. Bezner	May 21, 1908.	50	89 25
St. Denis.....	Vacant			
St. Marc.....	Vacant			
St. Zotique.....	Vacant.			8 33
Thurso.....	W. Donaldson.....	Sept. 30, 1915..	25	162 55
Varenes.....	O. Payette.....	Dec. 24, 1914	25	
Vaudreuil.....	O. Boileau	Mar. 14, 1914.	50	34 96
Verchères.....	W. Chaput.	Jan. 11, 1915..	25	
Victoria Bay.....	Vacant			
Ville Marie.....	J. J. Maillard	Feb. 2, 1899	25	
			Total.....	1,070 84
<i>Quebec District.</i>				
Amherst.....	J. C. Boudreau.....	July 1, 1913	25	336 68
Anse à l'Eau.....	Vacant			
Anse à l'Islet.....	J. Duguay	Sept. 17, 1912..	25	79 99
Anse aux Gascons.....	S. A. Huard	May 5, 1913	25	37 92
Anse St. Jean.....	E. Lavoie.....	April 19, 1915.	\$19 per year	47 65
Beauport.....	F. Guillot.....	April 25, 1912		38 40
Berthier.....	J. Blas	Nov. 7, 1905..	50	58 78
Bie.....	L. Roy.	Nov. 16, 1912	25	
Bonaventure River.....	Vacant			
Cap à l'Aigle.....	F. Charette	July 27, 1912..	\$18 per year	41 90
Cap aux Corbeaux.....	P. Cimon	July 27, 1912	\$32 per year	118 40
Carleton.....	E. Cyr.....	Feb. 15, 1916..	\$50 per year	58 44
Chateau Richer.....	N. Pare.....	May 13, 1912	25	82 73

SESSIONAL PAPER No. 21

List of Wharves and Wharfingers—Continued.

Locality.	Wharfinger.	Date of Appointment.	Remuneration allowed.	Amount returned to the Department
			p c	\$ cts.
<i>Quebec District—Con.</i>				
Chicoutimi.....	T. Tremblay.....	May 23, 1901.	25	861 15
Gaspé Basin.....	P. S. Lafontaine.	Jan. 8, 1916	25	
Grande Entrée.	F. Leslie.....	Jan. 30, 1915	25	138 33
Grande Rivière.....	G. Belliveau.....	April 27, 1912	25	235 96
Grindstone	A. Gaudet.....	April 18, 1914	25	415 30
Ile aux Grues.....	D. Vezina.....	June 30, 1904	25	
Les Eboulements...	H. Tremblay.....	Mar. 7, 1914	\$29 per year	63 80
L'Islet.....	Vacant.			
Matane	A. Pelletier..	Jan. 20, 1912.	50	241 02
Mechins	E. Verreault	Feb. 14, 1913.	50	76 15
Meguasha	Vacant.			
Montmagny	R. Fournier ..	Feb. 24, 1916	50	
Montmagny Basin.....	R. Fournier.....	May 23, 1913.	50	
Murray Bay.....	W. Tremblay	Mar. 14, 1913.	Nil.	737 26
New Carlisle.....	J. C. Hall.....	April 25, 1912.	25	116 72
Paspébiac.....	J. de Caen	Feb. 22, 1908.	50	37 73
Perce	J. M. LeBoutillier ..	April 17, 1912.	\$25 and 40%.	189 66
Pointe aux Esquimaux..	Vacant.			
Port Daniel.....	F. X. Gagnon.....	Feb. 26, 1907..	\$50 per year	90 80
Rimouski.....	U. Lavoie.....	Mar. 27, 1907.	50	242 69
Rivière Blanche.....	A. Quimper.....	Jan. 20, 1912.	50	83 38
Rivière du Loup.....	L. J. Puize.....	Nov. 7, 1905.	\$146 per year	482 18
Rivière Ouelle.....	J. A. Gamache (acting)..	June 23, 1913.	25	47 35
Roberval.....	S. Martel..	June 9, 1914	50	250 20
St. Alphonse.....	T. Fortier.....	April 20, 1909..	25% to \$100	485 22
St. Cecile du Bic.	O. LeBel...	Jan. 20, 1912	25	22 39
St. Irenée.....	G. Bouchard.....	Feb. 10, 1903	25	57 22
St. Jean, I O	Vacant. .			100 00
St. Jean Port Joli ..	L. Legros	Jan. 16, 1913.	25	
St. Laurent.....	T. Coulombe.....	Nov. 11, 1915.	50	55 95
St. Nicholas.....	Under lease			50 00
St. Simeon	E. Tremblay	Mar. 7, 1913	25	32 22
St. Thomas	R. Fournier.	May 23, 1913	25	117 63
Tadoussac.....	A. Gingras	May 29, 1906	25% and \$30	144 50
Trois Pistôles	P. Paradis	June 12, 1915	25	
			Total.....	6,275 00
<i>Nova Scotia.</i>				
Advocate Harbour.	Vacant.			
Annapolis Royal.	R. P. Saunders.	Oct. 8, 1913	25	10 05
Arichat.	D. H. Cutler.....	Mar. 21, 1912.	25	48 46
Arisaig.	Vacant. .			
Avonport.....	L. F. Fuller....	Aug. 13, 1902	25	
Babin's Cove...	S. Vigneau	Jan. 20, 1914	25	7 30
Baddeck	A. S. McDonald.	Nov. 25, 1912..	25	271 98
Bakers Point	Vacant.			
Barrington Passage.....	J. H. Christie...	Aug. 31, 1896..	25	102 63
Barrington Head	T. D. Swaine. .	Mar. 10, 1916	25	4 49
Bass River	Vacant. .			
Battery Point. .	Geo. Gatez	Nov. 25, 1915	25	4 88
Bayfield.....	Geo. Prowse	Jan. 20, 1914	50	3 60
Bear Point	C. O. Vienot	Oct. 29, 1912.	25	
Bear River	A. W. Dunn	Sept. 12, 1913	25	
Belliveau Cove...	St. C. Theriault..	Nov. 24, 1892	25	94 28
Black Point	E. W. Perry.....	April 30, 1913	25	14 24
Boulardarie	Vacant..			
Broad Cove	Vacant.			
Broad Cove Marsh.....	H. McDonald.....	Oct. 19, 1892.	25	
Brooklyn.....	G. McLeod	Mar. 30, 1914.	25	116 25
Brule Point.....	G. McLanders.....	Jan. 8, 1916.	25	
Burlington.....	Vacant.			
Canada Creek.....	H. Dickie	Aug. 12, 1899	25	3 03
Canning.....	F. A. McBride.....	Nov. 16, 1912.	25	

List of Wharves and Wharfingers—Continued.

Locality.	Wharfinger.	Date of Appointment.	Remuneration Allowed.	Amount returned to the Department
			p. c.	\$ cts.
Nova Scotia—Con.				
Canso...	Jas. Meagher.....	Dec. 13, 1905..	25	
Cape Auger.....	Vacant.....			
Cape Cove (Cape St. Mary)...	B. Doucette.....	Feb. 8, 1907..	25	27 58
Castle Bay	R. H. McNeil.....	Mar. 14, 1914	25	
Centreville...	A. Ward	May 28, 1899..	25	128 85
Chebogue	J. A. Haley	Aug. 16, 1901	25	
Chipman's Point	H. Thorpe	April 11, 1907..	25	
Church Point.....	D. Thibodeau	June 2, 1913..	25	
Clifton	Vacant			
Cow Bay. (See Port Morien).				
Cribbins Point.....	A. R. Boyd	Oct. 2, 1895..	25	
Deep Brook	J. C. W. Ditmars.....	Dec. 2, 1911	25	0 57
Delap- Cove	R. W. McCaul	Nov. 28, 1889..	25	
Descousse	A. Langlois	Aug. 26, 1912..	25	30 32
Digby	J. O. Dakin	Feb. 5, 1912..	25	2,999 80
Drum Head	Vacant.....			
Eagle Head	N. Leslie.....	Jan. 9, 1889..	25	
East Bay.....	A. McGillivray	Aug. 3, 1903..	50	
East Ferry	C. Harris	Oct. 29, 1915..	25	
East Harrington Cove.....	Vacant.....			
Ecum Secum	Vacant.....			
Englishtown.....	Vacant.....			
Freeport	J. L. Stevens.....	May 8, 1912..	25	48 78
Gabarouse	Vacant.....			
Grand Narrows	Vacant.....			
Granville Centre.....	H. Roney	July 6, 1903..	25	36 74
Great Village.....	Vacant.....			
Halls Harbour	J. C. Watson	Nov. 16, 1912..	25	32 53
Hampton.....	Vacant.....		25	18 45
Hantsport	Vacant.....			
Harbourville	W. H. Perry	Oct. 28, 1914..	25	26 41
Havre Boucher	B. Crespie.....	Mar. 9, 1915..	25	
Hortonville	F. G. Currie	April 30, 1898..	25	3 70
Indian Harbour	Vacant.....			
Iona	C. I. Cameron	June 5, 1915	25	
Iona near I. C. R. Bridge	Vacant.....			
Isaac's Harbour	F. D. Cook	Jan. 30, 1902..	25	1 95
Island Point.....	Vacant.....			
Jordan Bay.....	Wm. McKay.....	July 1, 1913..	25	4 62
Jordan River	Vacant.....			
Kelly's Cove	S. Keddy	Jan. 19, 1916	25	
Kingsport	I. N. Cox.....	Dec. 1, 1915..	25 % to \$300	652 43
Little Narrows	Vacant.....			
Little River	O. E. Denton	Feb. 5, 1912..	25	23 96
Lower Horton	Vacant.....			
Maitland	Vacant.....			
Margaretsville.....	Wm. Early	Jan. 15, 1912..	25	57 77
Meteghan River	C. Melanson	Sept. 1, 1915..	25	10 96
Meteghan Cove.....	M. R. Robichaud.....	Feb. 7, 1909..	25	19 97
Middle Country Harbour	Vacant.....			
Militia Point	D. McIntosh	Aug. 20, 1892..	25	
Mill Creek	J. E. Porter.....	Jan. 31, 1914..	25	36 81
Minasville	Vacant.....			
Monday Point.....	Vacant.....			
Morden	John Duggan	Aug. 23, 1914..	50	2 89
New Edinburgh	C. T. D'Eon.....	April 3, 1912..	25	
Newellton	A. C. Newell.....	April 23, 1906..	25	15 21
North Wallace	Vacant.....			
Noel	Vacant.....			
Ogilvie	J. L. Swindle.....	Mar. 4, 1907..	25	
Owl's Head	D. Palmer, Jr.	April 13, 1910..	25	
Parker's Cove	D. Robinson	Dec. 13, 1913..	25	10 1
Parrshoro	Vacant.....			
Phinney Cove.....	A. Bent	Dec. 24, 1907..	25	

SESSIONAL PAPER No. 21

List of Wharves and Wharfingers—*Continued.*

Locality.	Wharfinger.	Date of Appointment.	Remuneration allowed.	Amount returned to the Department
			p.c.	\$ cts.
<i>Nova Scotia—Continued.</i>				
Pickett Pier.	F. A. Eaton	Aug. 2, 1899	25	24 92
Pictou Island	Vacant.			
Plymouth	J. B. Purdy	Feb. 22, 1902..	25	
Plymton (Plympton)	W. K. Smith.	Aug. 8, 1890..	25	9 68
Portapique	Vacant.			
Port Clyde	Geo. Swain	April 1, 1915..	25	32 54
Port Felix.	Vacant.			
Port George	C. L. Reid.	Jan. 9, 1915..	25	
Port Hastings	Colin McDonald	Dec. 11, 1915..	25	1 11
Port Hawkesbury.	F. McInnis	Mar. 20, 1907..	25	185 60
Port Hood.	I. Smith	Dec. 20, 1912..	25	
Port Howe (Port Philip)	O. Tingley	Aug. 14, 1915 .	25	
Port Joli	J. McAdam	Feb. 5, 1900..	25	
Port Latour.	E. R. Reynolds	May 23, 1914..	25	23 55
Port Lorne	F. Beardsley.	June 9, 1897 .	25	32 02
Port Maitland	J. W. Raymond.	Feb. 20, 1914..	25	19 08
Port Morien	W. A. Brunn	Oct. 2, 1912..	25	64 51
Port Mouton.	I. Leslie	Oct. 17, 1912..	25	8 17
Port Wade	E. H. Johns.	April 3, 1912..	25	25 51
Poulanmond	C. N. Pertus.	Nov. 18, 1911..	25	60 43
Rays Creek	F. W. Harris	Dec. 3, 1915..	25	
Salmon River, Port Dufferin	Vacant.			
Sandford	A. Shaw	May 26, 1903..	25	
Saulnierville.	J. T. Saulnier.	Aug. 25, 1888..	25	1 20
Scotch Cove				10 34
Shag Harbour.	H. Shand	Jan. 31, 1916..	25	
Short Beach.	Vacant.			
Sheet Harbour	Vacant.			
Spencer Island.	Vacant.			2 64
Swim Point (Clark's Harbour)	J. A. Crowell.	Mar. 21, 1913..	25	149 76
Tancook	H. B. Slaughenwhite.	Jan. 28, 1915..	25	
Tenecape	Vacant.			
Tidnish	Roy Smith	Sept. 27, 1901..	25	
Tiverton	B. Blackford.	Oct. 17, 1906..	25	66 02
Tracadie	Vacant.			
Tupperville	Vacant.			
Tusket Wedge	Vacant.			
Victoria.	D. Ogilvie	Aug. 13, 1911..	25	
Wallace	Vacant.			
Walton	Vacant.			
Washabuck.				
West Arichat Pier.	Vacant.			
West Arichat Wharf	C. Terrio.	Oct. 28, 1915..	25	19 15
West Head.	H. N. Newell.	Feb. 7, 1910..	25	72 71
Westport	W. E. Kent.	Sept. 16, 1912..	25	47 05
West Pubnico.	A. A. D'Eon.	Feb. 20, 1914 .	25	27 61
White Head	E. L. Munroe	Oct. 23, 1906..	25	
Whitewaters.	H. S. Winters	April 22, 1913..	25	54 52
Whyecocomagh	D. Livingston	Dec. 22, 1906..	25	
Wolfville	J. L. Franklyn	Oct. 22, 1901 .	25	28 49
Wreck Cove	Vacant.			
			Total	5,838 26
<i>New Brunswick.</i>				
Alma	C. W. Parsons	May 21, 1915 .	25	
Anderson's Hollow	I. H. Copp.	Jan. 25, 1913 .	25	116 17
Baie du Vin.	W. Williston.	June 5, 1915..	25	
Bathurst	J. C. Meahan.	June 15, 1912 .	25	90 15
Black River.	A. L. Moore	Jan. 23, 1914 .	25	0 23
Buctouche.	J. J. LeBlanc.	May 2, 1912..	25	
Burnt Church	Jas. Anderson	Feb. 26, 1904..	25	
Campbellton Ferry	Vacant.			
Campbellton	W. W. Doherty.	Oct. 19, 1912..	25	1 85

List of Wharves and Wharfingers—Continued.

Locality.	Wharfinger.	Date of Appointment.	Remuneration allowed.	Amount returned to the Department
			p.c.	\$ cts.
<i>New Brunswick—Con.</i>				
Cape Tormentine.....	J. D. Lane.....	May 24, 1912.	25	
Caraquet	H. Foulem.....	June 26, 1912	25	101 42
Chases Point.....	Vacant.....			
Clifton (Stonehaven).	Vacant.....			
Cocagne.....	J. I. Bourque	Mar. 13, 1907	25	
Coles Point.....	J. B. Tower.....	June 21, 1909	25	
Dalhousie.....	W. J. Smith.....	June 27, 1891	25	357 24
Dipper Harbour	Vacant.....			19 11
Edgett's Landing.....	M. Steeves.....	Mar. 27, 1912	25	59 26
Gardners Creek	J. J. Armstrong.....	Dec. 22, 1909	25	
Grandique	E. Babineau.....	Nov. 12, 1914.	25	
Hopewell Cape	W. B. Jamieson	Dec. 17, 1915.	25	40 16
Hopewell Hill	F. J. Robinson.....	July 17, 1909	25	
Lameque.....	G. Chaisson.....	Sept. 8, 1915.	25	159 69
Little Aldouane	Vacant.....			
Lower Caraquet	J. O. Chaisson.....	Sept. 30, 1914	25	28 06
Main River.....	A. S. Murray.....	Mar. 1, 1906.	25	
Miscou..	H. Haper.....	Aug. 21, 1915	25	2 70
Moncton.	E. S. Cook.....	April 17, 1915..	25	53 33
Neguae.	C. McIntosh.....	April 18, 1910..	25	
Oromocto.....	Vacant.....			
Partridge Island.	Vacant			
Petit Rocher	J. Boudreau.....	Aug. 27, 1909.	25	4 69
Quaco.....	A. S. Vaughan.....	Nov. 5, 1912.	25	
Rexton.	T. Harnett.....	Aug. 3, 1911	25	
Shippigan.....	G. J. Henry.	April 6, 1910	50	75 21
St. Andrews.....	S. H. Rigby.	Nov. 26, 1914	25	
St. John West (Sand Point)...	J. E. Cowan	July 23, 1915.	\$1,500	18,754 37
St. John West, Nos. 6 and 7..	E. C. Elkin	Nov. 16, 1910	25% up to \$1,500	15,174 69
St. Louis.....	Vacant.....			
St. Mary's.....	H. M. Leger.	Dec. 19, 1905.	25	
St. Nicholas.....	John Grant..	Sept. 27, 1901	25	
Tabusintac...	W. M. Beattie.	Dec. 18, 1915..	25	
Tracadie.....	Louis Brean..	Oct 12, 1910	25	6 09
Two Rivers.....	J. Knowlton.	May 27, 1913.	25	14 18
			Total.....	36,908 04
<i>Prince Edward Island.</i>				
Aitken's Shore.....	J. M. Hewitt.....	April 3, 1912..	25	
Annandale.....	I. Howlett	Aug. 26, 1912.	25	44 60
Bay View.....	D. V. Fleming....	June 11, 1915.	25	14 61
Belfast	T. McLellan.....	Jan. 8, 1916	25	50 77
Brush Wharf	H. A. McDonald.	Sept. 30, 1914	25	26 52
Campbell's Cove.....	Vacant.....			
Chapel Point.....	R. H. McCormick	July 19, 1912..	25	11 29
Charlottetown.....	Under Agency....			1,398 81
China Point.....	W. S. N. Crane.	Sept. 18, 1885.	25	22 38
Clifton	J. Gunn.....	May 24, 1900..	25	8 83
Cranberry.....	Vacant.....			
Crapaud (Victoria).....	J. Day.....	Sept. 30, 1912..	25	212 23
Georgetown.....	R. R. Jenkins..	Oct. 14, 1902	25	34 55
Grand River South.....	W. A. Crossman	Jan. 14, 1914	25	
Grahams Pond .	Vacant.....			
Greek River.....	W. Butler.....	April 24, 1911.	25	8 67
Haggertys	J. Callaghan.....	June 25, 1912.	25	21 18
Hickeys.....	P. McGuirk.....	April 2, 1914	25	37 73
Higgin Shore	A. A. Moore.	Jan. 31, 1916.	25	4 20
Hurds Point.	R. M. Holland.....	May 21, 1913.	25	
Keirs Shore.	W. Hodgson	June 10, 1895	25	89 37
Lambert Stevens (Montague)..	W. A. Johnstone...	May 3, 1900..	25	30 46
Lewis Point	J. G. Scrimjeour	May 22, 1915	25	
Lower Montague.....	Benj. Aitkins	Dec. 22, 1909	25	
McGees Pier.	Vacant.....			

SESSIONAL PAPER No. 21

List of Wharves and Wharfingers—Concluded.

Locality.	Wharfinger.	Date of Appointment.	Remuneration allowed.	Amount returned to the Department
			p c	cts.
<i>Prince Edward Island—Con.</i>				
McPhersons Cove.....	J. Christian.	April 18, 1914.	25	15 22
Mount Stewart	Vacant			37 59
Murray Harbour North. .	B. Richards	Jan. 19, 1909	25	4 90
Murray Harbour South	G. Billard.....	June 14, 1913.	25	15 32
Newport (Cardigan)	Vacant.			
Nine Mile Creek.	C. McDonald	Mar. 14, 1914	25	
North Cardigan.....	H. McDonald.....	May 23, 1914	25	25 56
Oyster Bed Bridge.....	H. Gallant.....	May 22, 1912.	25	
Pinette ..	Vacant.			
Pownal ..	M. M. Haley....	Oct. 13, 1896	25	22 23
Red Point.	A. McAulay.	May 24, 1912	25	
Souris	Vacant.			
South River.	Vacant.			
Sturgeon	W. Friffin.....	Nov. 9, 1912.	25	22 33
St. Marys Bay .	G. H. Hicken	June 11, 1910	25	7 98
Tignish	J. E. Richard....	Sept. 16, 1912	25	2 40
Vernon River.....	John Finlay.....	April 25, 1912.	25	105 25
West Point	Vacant.			
Wood Island.....	J. Young.....	April 10, 1899..	25	5 18
			Total	2,280 16
<i>British Columbia.</i>				
Ladysmith	D. T. Conway	Feb. 6, 1906..	25	
Langley	Vacant.			
Masset	Vacant.			
Sidney Harbour.....	C. C. Cochran.....	Nov. 25, 1910	25	41 01
Stewart	F. W. Falconer	Sept. 25, 1915	25	4 46
			Total.....	45 47
<i>Manitoba.</i>				
Selkirk.....	J. A. Hunt.....	May 31, 1912	25	

RÉSUMÉ OF WHARFAGE.

RESUME.

Wharfage.		Harbour Dues.
\$ cts.		\$ cts.
5,838 26	Nova Scotia	1,104 10
36,908 04	New Brunswick..	
2,280 16	Prince Edward Island	
6,275 70	Quebec District.	185 00
1,070 84	Montreal District.....	
4,260 10	Ontario	
	Manitoba	
45 47	British Columbia . . .	279 00
56,678 57	Total	1,568 10

7 GEORGE V, A. 1917

STATEMENT of Expenditure of Marine Branch from Confederation to March 31, 1916.

	\$	cts.		\$	cts.
1868.....	371,070	56	1892.....	861,426	80
1869.....	360,899	90	1893....	898,720	03
1870.....	367,189	11	1894....	905,654	34
1871.....	389,537	12	1895....	895,828	28
1872.....	518,958	49	1896.....	793,634	49
1873.....	706,817	92	1897.....	867,772	90
1874.....	845,150	90	1898.....	856,192	50
1875.....	844,586	09	1899.....	1,102,601	90
1876.....	970,146	27	1900.....	982,561	97
1877.....	820,054	38	1901.....	1,029,925	32
1878.....	786,156	23	1902.....	1,501,618	88
1879.....	755,359	47	1903.....	1,671,494	77
1880.....	723,390	89	1904.....	2,150,940	31
1881.....	761,730	62	1905.....	4,747,722	81
1882.....	774,831	53	1906.....	5,066,252	66
1883.....	825,010	82	1907.....	3,637,599	82
1884.....	927,241	61	1908.....	5,274,774	18
1885.....	1,129,901	14	1909.....	4,692,806	85
1886.....	980,120	59	1910.....	4,197,420	24
1887.....	917,557	31	1911-12.....	4,911,140	67
1888.....	883,250	85	1912-13.....	5,213,223	55
1889.....	1,023,801	34	1913-14.....	5,828,027	37
1890.....	807,417	53	1914-15.....	6,202,908	16
1891.....	885,410	11	1915-16.....	5,621,610	88

APPENDIX No. 6.

METEOROLOGICAL SERVICE

TORONTO, May 25, 1916.

The Deputy Minister of Marine,
Ottawa, Ont.

SIR:—I have the honour to submit the forty-fifth Annual Report of the Meteorological Service for the fiscal year ended March 31, 1916.

Meteorological returns have been received at the central office from 532 stations, including telegraph reporting stations and climatological stations, but not including storm signal stations which are 112 in number.

For various duties in connection with the service 370 persons, chiefly observers, have been in receipt of pay, and of this number thirty-four were employed in the central office.

During the year the number of observing stations has increased in the aggregate by forty-two; sixty-eight new stations having been opened, while twenty-six were closed.

The closing of stations is always to be regretted, as the longer the record at a place the more valuable it is. In the early days of the service nearly all stations were established on a wholly voluntary basis, but as years passed it was found that in order to obtain observers in outlying localities such as Hudson bay posts in the north, and at places away from populous centres, it was necessary to pay small stipends, and thus quite a number of stations ere long had an annual allowance ranging between \$18 and \$100.

Subsequently, it was recognised that while at some places the same voluntary observer continued observing through a long term of years, at the majority of the stations, the work was of a desultory character, and the observing duties were turned over from one to another and there were long breaks which vitiated the value of the station's records.

With the advent of electrical power came a great demand from engineers for information regarding the rainfall over water sheds of our southward flowing rivers, and the information desired was the average value of the rainfall, the average periodic variations, the secular change, and the average non-periodic variability. Accurate information with these details cannot yet be fully supplied.

Again, with the movement towards forest conservation and the establishment of the great pulp industries came numerous applications for the same information as the electrical engineer had asked for.

Then again, the Government and Railway departments dealing with the problems of irrigation in the western provinces, found the same information was essential to the economic conduct of their work, and lastly Government commissions have found exact meteorological data necessary in connection with the Waterways Treaty between Canada and the United States.

The Superintendent of Irrigation wrote me in March, 1915, as follows:—

“In connection with the division of the water of St. Mary and Milk rivers between Canada and the United States, under the provisions of article vi of the Waterways Treaty, this branch has for several years been

collecting stream flow data on these two rivers and their tributaries in Canada. Similar work has been carried on by the Geological Survey in the state of Montana. It is a question, however, whether the measured flow is a true indication of the total volume of water falling on this watershed. Possibly a computation based upon precipitation records and computed runoff in the different portions of the watershed might produce a very different total volume of water to be divided between the two countries."

"Will you be kind enough to let me know whether the records of Canada and the United States will permit you to divide this watershed into belts or zones and to state, more or less definitely, the amount of the annual precipitation and runoff in each such zone. If this can be done with a reasonable degree of accuracy, and if the number of years' observations upon which each statement is based can be given, the result may be very useful in the preparation of the Canadian case."

In view of these various urgent demands for rainfall data, it became necessary for the Meteorological Service, under which the Climatological Survey has been placed, to take such action as would insure continuous observations of rainfall at numerous stations well distributed over the Dominion.

It has then been well proved that to ensure continuous accurate observations, small salaries must be allowed to make it worth the while of the busy man to attend with regularity to the work required of him. It has been this consideration which has led to my asking for the establishment of numerous rainfall stations with the small annual stipend of \$48 attached to each of them — and our experience to the present time indicates beyond peradventure, that the system is a good one, and will alone provide for a satisfactory network of homogeneous stations, and lessen the number which will be closed annually.

The following is a list of the new stations and the names of the observers:—

Station.	Class.	Agent.
Coronation, B.C.....	II	Wm. Haylmore.
North Bend, B.C.....	II	H. Gowan.
Alvaston, B.C.....	II	M. P. Williams.
Kleena Kleena, B.C.....	II	S. H. Colwell.
Metchosin, B.C.....	II	W. Fisher.
Parksville, B.C.....	III	G. M. Bernard.
Summerland Exp. Farm, B.C.....	II	B. A. Blair.
Vanderhoof, B.C.....	II	R. M. Belt.
Wabasea, Alta.....	II	Rev. Alfred S. White.
Brooks, Alta.....	II	F. W. Gibson.
Langdon, Alta.....	II	A. McKinnon.
Milk River, Alta.....	II	W. M. Kinder.
Manyberries, Alta.....	II	M. Mickleson.
Jenner, Alta.....	II	Jerry Fisher.
Foremost, Alta.....	II	T. H. Frankish.
Nordegg, Alta.....	II	Wm. Stevenson.
Rocky Mountain House, Alta.....	II	Wm. Austin.
Monitor, Alta.....	III	Chas. Connah.
Caboi, Sask.....	II	F. W. Abraham.
Assiniboia, Sask.....	II	Percy Warren.
Shaunavon, Sask.....	II	Neil McLean.
Prelate, Sask.....	II	W. Huxtable.
Crane Lake, Sask.....	III	H. R. Wilkinson.
Gull Lake, Sask.....	II	E. H. Thomas.
Saskatoon, Sask.....	I	J. L. Hogg.
Indian Bay, Man.....	II	A. C. D. Blanchard.
Port Nelson, Man.....	I	A. Sutherland.
Pinawa, Man.....	II	H. E. Phillips.
Goodlands, Man.....	II	Thos. C. B. Boon.
Sprague, Man.....	II	A. E. Powell.

SESSIONAL PAPER No. 21

Station.	Class.	Agent.
Morris, Man.....	II	D. M. Ure.
Giroux, Man.....	II	Jas. E. Green.
Grand Rapids, Man	II	J. Fletcher.
Quorn, Ont	II	A. W. Fanning.
Sellwood Junction, Ont.....	III	R. J. Waldbrook.
Healy Falls, Ont.....	III	G. A. Vandervoort.
North Bay, Ont.....	II	J. H. Metcalf.
Meaford, Ont.....	II	J. Magor.
Brockville, Ont.....	II	G. G. Grothier
Mount Forest, Ont.....	II	John Hanna.
Fenelon Falls, Ont.....	II	M. Haskell.
Pembroke, Ont.....	II	W. J. Moore.
Trenton, Ont.....	III	Seymour Power Co.
Stratford, Ont.....	II	Alex. Abraham
Madawaska, Ont.....	II	Wm. Lloyd.
Lucan, Ont.....	II	C. W. Hawkshaw.
Ruel, Ont.....	II	T. Mallette.
Walkerton, Ont.....	II	Chas. F. Nutting.
Searchmont, Ont.....	II	A. Lennon.
Nipissing, Ont.....	III	W. H. Smith.
Gore Bay, Ont	II	J. F. Metcalf.
Vankleek, Ont.....	III	E. H. Elvidge.
Clontarf, Ont.....	II	Chas. Gierman.
Rosspport, Ont.	II	E. J. McKenna.
Picton, Ont.....	III	F. D. Hawkins.
Kirkland Lake, Ont.....	III	E. M. Monteith.
Trout Lake, Ont.....	I	John Gregg.
Hornepayne, Ont	II	J. A. Mullin.
Lambton, Que.....	II	Alfred Rousseau.
Seven Falls, Que.....	II	S. W. Ross.
Fort George, Que.....	II	Owen Griffith.
St. Joseph D'Alma, Que	II	P. A. Guay.
Gaspe, Que.....	II	Chas. T. Davis.
Baddeck, N.S.	II	Rev. Jno. McKinnon
Upper Stewiacke, N.S..	II	Marie Fulton.
Lochaber, N.S.....	II	Jno. T. Keating.
Stillwater, N.S....	I	Henry A. McLane.
Cape Dorset, Baffin Land.....	I	Stephen J. Stewart.

CENTRAL OFFICE.

Since my last report Mr. Basil Cody has resigned from the staff of the central office and W. D. Allan, Lt.-Col., 2nd Battalion, C.E.F., is still on active service, and there have been no new appointments.

FORECAST BRANCH.

As it happens, both the above named assistants were attached to the forecast branch which is in consequence under-manned, and most of the work is being done by the director and assistant director, who with one assistant take equal turns of night duty. Of the daily forecasts issued during the year, 85.6 per cent were verified and of the storm warnings, 87.4. Forecasts and storm warnings have also been issued with the same regularity for Newfoundland*as for Canada, and with a marked degree of success, but no acknowledgment of the work performed has been received from that country either of a financial character or as a letter of thanks.

Fewer gales than frequently occur during a like period were experienced in Ontario, Quebec, and the Maritime Provinces during the season of navigation in the fiscal year from April, 1915, to March 31, 1916, inclusive. There were, however, several quite remarkable summer storms, the most notable being the severe gales in the St. Lawrence valley, on the 22nd of June and the 9th July,

7 GEORGE V, A. 1917

and the one in the lower lake region on the 3rd of August. There was also a violent early autumn gale in the gulf of St. Lawrence and the Maritime Provinces on the 26th of September which caused several disastrous wrecks, besides much other damage. November, as is usually the case, was responsible for many gales on the Great Lakes, three out of the seven being fresh to heavy, whereas February and March were marked by a succession of heavy gales in the Maritime Provinces.

The gale on the 22nd of June was not warned; the fresh gale in the maritime provinces on the 28th of January was also missed, and a warning issued to the lower lake region on the 20th of August in advance of a West India hurricane which had caused great damage in the gulf of Mexico and the Gulf States was not verified. The remains of the storm actually passed directly over lake Ontario on the 21st but with so much diminished energy that strong winds only prevailed, attended by heavy rains. With the few exceptions mentioned, all the gales were predicted and in nearly every case in advance of the beginning of the storm, the percentage of verification for the heavy gales being as high as 90 per cent.

PUBLICATION BRANCH.

The results obtained from the returns received from the numerous meteorological stations have been used in the preparation of the various regular publications of the service, including the Annual Climatological Report, the Monthly Weather Review, the Monthly Map and the Report of the Toronto Observatory. In addition to these regular publications the service has issued a booklet on the "Temperature and Precipitation of British Columbia" which gives in detail the climatic features of that province. Similar booklets for the other provinces are to follow, and the whole will subsequently be bound together. There has also been issued a small brochure on the "Climate of Canada."

STATIONS INSPECTED DURING THE YEAR 1915-16.

Sarnia, Cottam, London, Port Stanley, Port Burwell, Port Dover, Port Colborne, Oakville, Woodstock, Southampton, Warton, Owen Sound, Meaford, Collingwood, Qualicum Beach, Nanoose Bay, Nicola, Stonecliffe, Cochrane, North Bay, Haileybury, Sault Ste Marie, Montreal, Quebec, St. John, Halifax, Yarmouth, Sydney, Flat Point, Little Glace Bay, North Sydney, Charlottetown, Tignish, Summerside, Perce, l'Anse au Beaufils, Corner of the Beach, Barachois de Malbaie, Point St. Peter, Gaspé, Cape Cove, Grand River, Ste. Adelaide de Pabos, Father Point, Huntingdon, Shawbridge, Brome, Sherbrooke, Lennoxville, Megantic, Murray Bay, Chicoutimi, Maniwaki, Brockville, Parrsboro, Truro, Wolfville, Port Arthur, Fort William, Winnipeg, Minnedosa, The Pas, Prince Albert, Battleford, Edmonton, Calgary, Medicine Hat, Swift Current, Moosejaw, Qu'Appelle, White River, Oshawa, Peterboro, Lakefield and Beeton.

PHYSICS BRANCH.

Upper Air.—Throughout 1915 the international balloon work was completely disorganized, but for 1916, as many of the nations are continuing the work during the war, a list of international days has been arranged and is being followed in Canada. In 1915 one balloon a month was sent up, except in June, when three were dispatched, the dates corresponding with those selected in Britain.

The recoveries during the year were not good, and only 11 out of 16 have been found up to the present. Previous to 1915, all meteorographs recovered

SESSIONAL PAPER No. 21

had usable records, but during the year two of those recovered had no records on them, and another was spoiled. The following table gives the particulars of the ascents:—

Date.	Greatest Height.	Temperature at Greatest Height.	Height of Stratosphere.	Temperature at base of Stratosphere.	Remarks.
1915.					
April 10.....	11.3 Mls.	−70 F.	7.3 Mls.	−73 F.	Found in Lake Huron. Found in Lake Erie.
June 2.....	6.6 Mls.	−62 F.	Not reached		
June 3.....	7.3 Mls.	−68 F.	"		
Nov. 11.....	9.6 Mls.	−82 F.	7.5 Mls.	−88 F.	
1916.					
Feb. 29.....	7.6 Mls.	−54 F.	5.9 Mls.	−72 F.	

The ascent of June 2, is very interesting as showing the height to which the southeasterly current extended: it is the third occasion on which a balloon was found west of the starting point.

The results of all the ascents up to May, 1915, have been worked out in ordinary and absolute units according to the request of the International Meteorological Committee, and published in a paper on Upper Air Investigation in Canada, Part 1, M.S. 51

Part 2 of the Investigation will contain an account of the kite work and is now in the press. A number of records of the pilot balloons sent up in the Arctic have been received and from those worked out it is anticipated very valuable information will be obtained in regard to the air currents in the Arctic.

Radiation.—The comparison of the Angstrom pyrheliometer with the Callendar Sunshine Receiver has been completed, and the results obtained suggest the possibility of designing a new form of sunshine receiver that will eliminate some of the defects of the present form.

The Callendar sunshine receiver has been in operation throughout the year, and whenever opportunity occurred the measurement of the amount of heat received on a surface exposed perpendicular to the sun's rays has been measured by the Angstrom pyrheliometer.

The results to date for both instruments have been reduced, and the mean is given in the following table for each month.

Instrument.	Jan.	Feb.	Mar	Apr	May.	June.	July.	Aug.	Sept.	Oct	Nov.	Dec	Year.
Callendar—Gram. Calories per day on a horizontal surface of 1 sq. cm.....	90	203	270	280	401	446	389	339	261	198	107	83	
Angstrom—Gram. Calories per min. per sq. cm.....	1.185	1.209	1.239	1.293	1.180	1.216	1.079	1.119	1.221	1.110	1.188	1.091	1.167

Anemometer Comparison—The anemometer in use at Canadian stations has never been compared with those in use in other countries: it is designed

7 GEORGE V, A. 1917

on the assumption that the distance travelled by the wind is three times the distance travelled by the centre of the anemometer cups in the same time. This factor has been found to be too high in other countries, and for the standard anemometer at Kew, the factor 2·2 instead of 3 has been found to be correct. The Dines pressure tube anemometer has been very carefully compared on a whirling machine and with the Kew standard; for this reason a pressure tube anemometer was erected on the same tower as the Canadian cup anemometer four years ago, and the records given by the two instruments have been compared. The mean of all velocities gives the cup anemometer readings 1·357 time those of the pressure tube. If however, the factor 2·2 instead of 3 is used, the cup anemometer and pressure tube would be practically identical.

Electric Potential of the Air.—The self recording electrometer for measuring the potential of the air has been in operation throughout the year, and the results to date will be published shortly.

Evaporation.—Observations on evaporation have been made at the central office for some years, and during the past two years the observations have been continued during the winter by weighing a pan of water or ice, and from the loss in weight from day to day, the amount of evaporation has been calculated. Owing to the increasing requests for evaporation data, it is proposed to extend the observations this year and establish evaporation stations at about seven places in the Dominion.

Earth temperature.—Mr. Patterson has designed a special commutator for use with resistance thermometers by means of which it will be possible to get continuous records of earth temperatures at various depths on one instrument, and it is hoped to get it installed during the year.

Barograph and Thermograph.—The barograph and thermograph obtained for recording the pressure and temperature on the top of Sulphur mountain at Banff has been overhauled in the office, and they will now work about a month without requiring attention. Mr. Patterson has substituted a mercurial barometer for the aneroid on the barograph and by means of a float arranged to compensate for temperature changes, he has converted the barograph into a compensated mercurial barograph recording at a distant station.

TERRESTRIAL MAGNETISM.

The photographic magnetic instruments have been kept in operation throughout the year without any material loss of record. The value of the base line for declination was determined from weekly observations with the absolute declinometer. The observations were usually made on Monday and comprise four sets of eight pointings on the magnet taken in conjunction with eye readings of the photographic instrument. For horizontal force the base line was determined twice a month as before. In the case of the vertical force, it was found necessary to increase the number of absolute observations to four per week in order to reduce the probable error to ± 27 .

The westerly declination has increased from $6^{\circ} 27' \cdot 2$ in March, 1915, to $6^{\circ} 32' \cdot 2$ in March, 1916, an annual change of $5' \cdot 0$. The horizontal force has decreased during the same period from 0·16039 dynes to 0·15983, an annual change of 0·00056 dynes, whilst the vertical force has decreased from 0·58673 dynes to 0·58553. This change in horizontal and vertical force is equivalent to a change in the inclination from $74^{\circ} 42' \cdot 7$ to $74^{\circ} 43' \cdot 9$.

Magnetic disturbances were of very frequent occurrence during the year, the month of February, 1916, being the only month during which no large disturbance was recorded. The greatest storm was on June 17, which was remarkable both for its duration, the magnitude of the disturbing forces and the rapidity with which the forces changed. The extreme values of declination

SESSIONAL PAPER No. 21

during this storm were $5^{\circ} 6.2$ W. and $8^{\circ} 21.7$ W. The horizontal force ranged from 0.5586 dynes to 0.16418 dynes and the vertical force from 0.58040 dynes to 0.59152 dynes.

Other disturbances worthy of note were recorded on August 25, October 15, and November 5 and 6 of 1915 and on March 17, 1916, but neither in amplitude nor duration are any of these comparable to that of June 17, 1915.

The mean diurnal range obtained from the hourly measures varied in declination from a maximum of $14' .4$ in August, 1915, to a minimum of $6' .5$ in December, 1915, in horizontal force from a maximum of 0.00052 dynes in August to a minimum of 0.00028 dynes in December, and in vertical force from a maximum of 0.00032 dynes in November, 1915, to a minimum of 0.00006 dynes in December, 1915, and February, 1916.

In November, at the request of Dr. L. A. Bauer, Director of the Department of Terrestrial Magnetism of the Carnegie Institution of Washington, Mr. Jackson of the Observatory staff was sent to Washington in order to make a series of comparisons between the Agincourt magnetic instruments and the International magnetic standard as determined by Dr. Bauer. The results of these comparisons are as follows:—

I.M.S.—Agincourt (Standard Declinometer) = $-0'.93$

I.M.S.—Agincourt (Elliott Magnetometer 98) = $\div 0.00033$ H

I.M.S.—Agincourt (Toepfer Inductor No. 89) = $-0'.15$

Commencing January, 1916, all Agincourt data will be reduced to international magnetic standard.

During the year 129 comparisons attached to surveyors' transits, were adjusted and compared with the Agincourt standard declinometer, and the index corrections resulting therefrom were supplied to the Surveyor General. Assistance was given to Messrs. Purser, Wight and Robinson, of the Department of the Interior, in standardizing their total force magnetic instruments both before and after their field work.

Mr. French of the Dominion Observatory was also given assistance in comparing his magnetometer with the Agincourt standards both before and after his field work.

TIME SERVICE.

During the year, fifty-nine determinations for time have been made by transit of stars in the meridian with the 3-inch Troughton and Simms transit instrument. Cloudiness during part of November and February prevented frequent observations for time. The positions of the stars have been taken mostly from the American Ephemeris and British Nautical Almanac.

The collimation error of the transit instrument, as in former years, has been chiefly determined by reversal on Polaris and occasionally in conjunction with that of the instrumental azimuth error as determined by star transits in reverse position of the axis using the method of least squares in their computation.

Time has been given over the telegraph and telephone lines to all inquirers as also the sidereal time which has been frequently called for.

The performance of the clocks has been very satisfactory. The new Magneta clock with its system of secondary clocks has been running a year without a failure since installment. The automatic synchronizer by which it is made to synchronize with the mean time master clock has also done the same perfect work.

The pier of the transit clock still shows a slight progressive sinking towards the East but is of small amount.

The time exchanges between Toronto and Quebec, Montreal and St. John, N.B., have been made as usual, being recorded on the chronographs at Toronto,

Montreal and St. John. The errors of the clocks have been computed from the latest observations.

The usual 11.55 a.m. signal on the fire alarm system has been continued throughout the year. Time has been given weekly to the magnetic observatory at Agincourt and daily to the Canadian Northern Railway out of Toronto.

The following table will show the differences between the times at the several observatories and that at Toronto. The sign + indicates slow of Toronto:—

Date.	Montreal.	Quebec.	St. John, N.B
1915.	Seconds.	Seconds.	Seconds.
April 9.	−0.25	+0.59	+0.38
April 16.	−0.91	+0.26	+0.06
May 14.	No exchange	−0.30	−0.31
May 28.	+0.40	+0.66	−0.30
June 11.	−0.17	+0.52	−0.14
July 9.	−0.61	+1.25	−0.11
August 13.	−1.11	+0.47	−0.40
September 17.	−0.75	+0.23	−0.55
October 8.	Wire trouble	+0.65	No exchange
October 29.	−0.10	+0.03	+0.10
November 26.	+1.64	+1.39	No exchange
December 22.	−0.30	−0.43	+0.25
1916			
January 14.	−0.13	+0.18	No exchange.
January 28.	−0.08	+1.23	−0.51
February 11.	+0.10	+0.25	+0.49
February 25.	−1.12	−0.17	−0.88
March 24.	−1.05	−1.64	−0.99

SUN SPOTS, 1915-16.

During the year April 1, 1915, to April 1, 1916, the sun's surface was examined with the 6-inch equatorial telescope on 149 days, and maps showing the relative positions of spots on 145 of those days were made. The N., S., E., and W. points were defined and also the sun's axis and equator. During the progress of the solar eclipse of February 3, 1915, several good photographs were secured as well as sketches. Owing to cloudiness the time of beginning and ending of the eclipse could not be determined by observation.

On April 3 a large spot, followed by several medium sized and small spots, extending easterly for a considerable distance, was observed in northeastern quadrant of sun, disappearing over western limb on April 11. On the 20th April a group of small penumbral spots with very small ones rather suddenly developed in southeastern quadrant disappearing over western limb on 26th. Two scattered groups of small spots, equidistant north and south of equator, traversed the sun's disk April 27 to May 8. No spots were seen on May 11, 15, 17, and 18. May 25 to June 2 a small northerly group with one medium sized penumbral spot passed over the sun's disk. From June 14 to 29 numerous scattered groups, both north and south of equator, were observed. On July 6 a large group came over southeastern limb disappearing over southwestern limb July 16. On 29th another very large group came over southeastern limb, developing into a magnificent display of small penumbral spots followed by an immense area of very small spots. This group presented a fine spectacle and covered an enormous area extending in a northwesterly direction south of the

SESSIONAL PAPER No. 21

equator. After this display nothing of note occurred except the passage of occasional small groups north and south of the equator until September 21, when a small group about 10 degrees north of the equator traversed the sun's surface going over the western limb on September 30. This condensed group was remarkable for its very beautiful large penumbral spot.

Between October 4, 1915, and March 2, 1916, several not very prominent groups appeared both north and south of the equator. Two moderately large spots with attending smaller ones passed across the sun's disk, equidistant north and south of the equator from March 2 to 13. A fairly-large sized group was observed on March 23 and 25 north of the equator, but cloudiness prevented continual observation of this group. At the end of the year March 31, the sun's surface was occupied by four small groups north of the equator and a disturbed area in southeast quadrant.

SEISMOLOGY.

The Milne seismographs at Toronto and Victoria have yielded some very interesting records. A seismograph for registering the vertical component, recording on smoked paper, has recently been installed at Victoria, and is working very satisfactorily. During the year the total number of disturbances recorded at Toronto was 123. Of this number three were very large. Fourteen were of a more moderate character, and the remainder show trace amplitude ranging from 0.1 to 2 mm. Not only was the total number greater than that which we usually record, but from May, there was a marked increase in the intensity of the disturbances. The most important of the series occurred on September 7, October 3, and January 1. The latter disturbance was one of the largest we ever recorded at Toronto. The earthquake centres were located respectively in Guatemala, Nevada and in the South Pacific, the latter being submarine; possibly in the vicinity of the New Hebrides. The more moderate disturbances were recorded on May 1, June 1, July 31, October 11, November 1, and 21, December 12 and 31, January 13 and 19, February 1, 6, 20 and 27. The majority were of submarine origin, the earthquake centre being in the vicinity of the Kurile islands, Alaska, and off the coast of Central America.

Seismologists at present are chiefly investigating the question of the true velocity of earthquake waves through the various depths of the earth. The present Milne instrument fails at times to register the P. and S. waves. The British Association is desirous of introducing a perfect modification of the present Milne instrument, by increasing the magnification of the record and applying a certain amount of damping of the boom which will shew the preliminary waves more distinctly and give a truer representation of the earth movements. It is to be hoped that both our stations will be equipped with the type of instrument which they adopt. It would also be advisable to introduce at Toronto an instrument for registering on smoked paper, as very often the press seek information regarding some earthquake that has just been reported, and as it takes some time to cut off the film of the present Milne instrument and develop it, it is some little time before the required information can be furnished. Monthly tabulations of all seismic disturbances are forwarded to the Central Seismological Observatory of the British Association and to various other countries and an increased demand for copies of our observations from scientific institutions all over the world point to the importance attached to our records.

PHENOLOGICAL OBSERVATIONS.

The collection and tabulation of phenological statistics, which are in charge of Mr. F. F. Payne, were not quite as extensive as in past years, but a few reports

7 GEORGE V, A. 1917

giving the dates of flowering plants, the arrival of birds, the sowing and reaping of grain, etc., were received from each province, and they agree very fairly with the meteorological conditions. Valuable reports giving average dates of similar phenomena recorded throughout the province of Nova Scotia were kindly supplied as usual by the superintendent of education for that province, and others from school teachers have also been supplied by the Department of Education for Saskatchewan which is now using this as a means for nature study in the schools.

OUTSIDE STATIONS.

Appendices A, B, and C are the separate reports of the observatories at the chief stations at Quebec, St. John, N.B., and Victoria. Others of the more important stations where there is certain special work performed beyond the daily duty of observing, are as follows:—

1. *Vancouver*.—At this station the observer, Mr. T. S. H. Shearmen, has an office in the public building, where he rates chronometers for shipmasters, fires the gun by means of an electrical contact and supervises the manifolding and distribution of weather bulletins.

2. *Banff*.—In addition to the observing station in the village, observer Sanson has charge of the observatory on Sulphur mountain and deserves much credit for his unremitting energy in visiting the upper station.

3. *Edmonton*.—The chief observer and assistant observer are still away on military service, and the work is being performed by Mrs. Owen, who, however, does little beyond the mere observing. The full duties of this provincial chief station are in abeyance until after the war.

4. *Moosejaw*.—The chief station in Saskatchewan is in regular working order and within the past year the observer has occupied a suite of rooms in the new Dominion building.

5. *Port Arthur*.—Observer Cooke now occupies a room in the new public building where he answers inquiries regarding the weather and climate.

6. *Montreal*.—At this observatory Prof. C. H. McLeod, in addition to superintending the meteorological observations at McGill University, directs the operations of a well equipped time observatory from which the time signals are given to the various railways and to shipping and many parts of Montreal.

Respectfully submitted,

R. F. STUPART,
Director

APPENDIX A.

QUEBEC, April 1, 1916.

The Director, Meteorological Service,
Toronto.

SIR,—I have the honour to transmit my annual report for the year 1915-16.

In addition to the usual meteorological observations which were recorded without interruption, special reports were furnished daily to the public through the newspapers and otherwise, and the number of inquiries at this observatory has increased considerably.

SESSIONAL PAPER No. 21

Statements and extracts from the records of the observatory were prepared for engineers and other persons interested in industrial corporations, also for the court in many cases.

The weather bulletin published by the Meteorological Service at Toronto has been posted regularly at the public buildings, and inquiries by farmers and tourists respecting the weather conditions and probabilities were very numerous especially during the summer months.

Several barometers and thermometers were compared with our standards, and readings of the meteorological instruments were furnished daily to several of the militia quarters and forts in Quebec and surroundings.

The correct time was given to the shipping by means of the time-ball during the navigation season, and by telephone to the watchmakers and to a very large number of people in and outside the city, the noon gun having been discontinued since the beginning of the war.

Owing to the ever increasing number of inquiries concerning the time, I take the liberty of suggesting that some means of distribution throughout the city be organized as exist elsewhere in centres of some importance.

The whole respectfully submitted.

ARTHUR SMITH,
Director, Quebec Observatory.

APPENDIX B.

OBSERVATORY, ST. JOHN, N.B., May 22, 1916.

R. F. STUPART, Esq., F.R.S.C.,
Director, Meteorological Service,
Toronto, Ont.

SIR,—I have the honour to present the following report of this Observatory for the fiscal year ending 31st March, 1916.

METEOROLOGICAL SERVICE.

The tri-daily observations have been continued without interruption at 9 a.m., 3 p.m., and 9 p.m., Atlantic standard time. The first- and last-mentioned are immediately telegraphed to the central office for use on the synoptic chart. An additional reading is made at noon to accompany the daily report furnished the evening newspapers. In addition to eye-readings of the various instruments, hourly tabulations and monthly abstracts are made from the automatic records of the barometric pressure, temperature, rainfall, humidity and direction and velocity of the wind. Anemograph records from the Point Lepreau wind station sent here weekly are tabulated for every hour and a monthly analysis made. The data from this station give most useful information of outside conditions in the bay of Fundy. During periods of abnormal, extreme, or stormy weather the press is furnished with any special information which may be of value or interest to their readers. Solar and terrestrial radiation thermometers have been installed since my previous report and daily observations from these instruments are taken.

The morning weather bulletin is now printed at the observatory on a rotary duplicating machine which ensures a more prompt issue after receipt of the telegraphic message from Toronto, which is immediately telephoned from the Western Union to the observatory office. The bulletin is distributed through the

7 GEORGE V, A. 1917

mail, posted in public places and published by every evening newspaper. The synopsis, giving movement of important changes throughout the continent, as well as prevailing weather conditions at the different adjacent stations, together with the forecasts for following days is of utmost importance to mariners, shippers of perishable goods and various other commercial and personal interests.

On receipt of the warning from Toronto, storm signals are displayed from the signal mast on Customs building here and the warning repeated by telephone to the storm warning agents at Quaco lighthouse and Point Lepreau.

On the morning opening of the telephone offices throughout this province the New Brunswick Telephone Company send your forecasts and have them displayed on forms supplied by the Meteorological Service. This most expansive distribution is made gratuitously and the courtesy greatly appreciated by residents of the various localities. The forenoon forecast as heretofore is telephoned the exchange at St. Martins.

The monthly returns received from all stations in the Maritime Provinces are checked and where necessary sums and mean values computed. After abstracting the required statistical and climatological records the returns are forwarded to the central office at Toronto. This has largely increased the data which we are frequently asked to promptly furnish shippers, commercial houses, transportation companies, contractors and others, both locally and from the adjacent provinces. It has also caused a considerable increase in our clerical work.

TIME SERVICE.

Observations for time with the transit telescope have been made as often as practicable to determine the errors and rates of the standard sidereal clocks. The Riefler sidereal which is used as the primary standard has given most satisfactory results. This clock, as in the past, has been run under constant temperature and pressure. So favorable are the conditions in the new clock-room that the pressure inside the case has not been observed to vary more than two millimeters during the past twelve months. The Kullberg sidereal has been used as the observing clock, comparisons being made on the chronograph about the middle of the group of stars observed. Comparison of the mean time transmitting clock is also made on the chronograph and any small outstanding error corrected by the apparatus formerly described.

The daily time signal has been regularly transmitted by telegraph to nearly all parts of the maritime provinces and is the standard of time for this section of the Dominion. As heretofore special signals are frequently transmitted, both by telegraph and telephone to mariners, chronometer raters and others.

The time-balls at St. John and Halifax have been dropped each week day at 1 p.m., standard time of the 60th meridian. The outside clocks connected by wire with the observatory have been hourly synchronized throughout the year. The various electrical appliances connected with our time service have been maintained in good condition and are giving the best possible satisfaction. The electric clock in Halifax is daily synchronized by our standard transmitting clock, and return signals from Halifax indicate but slight error in the daily rate of that clock.

The principal chronometer and watch adjusters in Halifax have sounders on their premises connected by wire with the Western Union office there and receive our 10 a.m. time signals daily. Some installations of electric clocks in Halifax use this signal to automatically synchronize their master clocks. In St. John the system of hourly synchronizing tower, street and office clocks, continues to give most satisfactory and useful results. A special wire from the observatory to the local telephone office operates the various clock line relays.

SESSIONAL PAPER No. 21

The telephone company make a nominal charge for this wire service which is well taken care of.

The new switch-board has been fitted, wired and connections made with main-line wires, chronograph, clocks and time-desk, replacing the temporary arrangements consequent upon removal to the new observatory building.

During the past season permanent walks have been laid, the ground seeded and sodded, and the front wall completed. The spacious lawn is now in good condition and gives a most desirable exposure for the outside instruments.

D. L. HUTCHINSON,
Director, St. John Observatory.

APPENDIX C.

VICTORIA OBSERVATORY,
MAY 25, 1916.

The Director, Meteorological Service,
Toronto, Ont.

SIR,—I have the honour to submit the following report upon this observatory for the fiscal year ending March 31, 1916. During the past year the regular tri-daily meteorological observations have been taken and weather forecasts derived from the telegraphic reports received from the western portion of this continent, have been issued daily except on Sundays and certain holidays, both morning and evening. These are published in the daily press both here and on the lower mainland, and each morning at 9 o'clock over thirty special bulletins are posted throughout this city and others in Vancouver.

Storm warnings have been issued throughout the year; these are greatly appreciated by mariners and particularly by towing companies and fishermen.

Several thousand telephone inquiries have been answered respecting the weather during the stormy months; some of these were from the builders of the new government breakwater and ocean docks.

Apart from the regular weather forecasts, special forecasts were furnished the Provincial Government Forestry Department during the summer months. These have proved of even greater value to that department this year than last, in the matter of warning the approach of great heat or hot dry winds in the interior of the province when forest fires are likely to occur and bring destruction if not checked in time. This branch of our work was gratefully acknowledged by a letter of thanks received at the close of the season from the above department.

The weekly and monthly weather reports derived from all our British Columbia telegraph stations are regularly published in the press of Vancouver island and the lower mainland and copies are mailed to certain fruit growers in the interior of the province.

The seismological instruments mentioned in last year's report, have proved most satisfactory, and during this year 108 earthquakes have been recorded here, while in many cases the records were so clear that the distances to their points of origin could be measured, and also the vertical movement these earth-waves caused locally.

The daily slow movements of both the East-West and North-South horizontal pendulums have been carefully measured, and interesting abnormal results have been obtained, which may have some practical bearing upon certain other phenomena. The minute oscillations of the vertical seismograph called

7 GEORGE V, A. 1917

"microseisms" have not been so pronounced this year as during last. These do not occur when gales prevail here but some times when great storms are reported on the west coast of Vancouver island.

THE TIME SERVICE.

Upon the 24th of May, 1915, the time ball which is installed upon the mast rising above the roof of the highest city building near the harbour, was dropped for the first time, and with only one or two failures due to faulty electric connections, this service has been continuous, and has proved of great value not only to shipping interests, but to the public, and for regulating clocks, factory whistles, and the military noon-gun.

The time for this service is obtained from star observations taken nearly every clear evening by means of the transit telescope, which is well mounted in a special room upon a massive concrete pier which rises from the solid rock. The adjustments for collimation and azimuth have been carefully made and a fine fixed mark for checking these has been established on a government building at a distance of two miles.

The level variations here are small even during the winter months, probably due to local climatic conditions.

It is possible by means of these observations to keep the time accurate to within one or two-tenths of a second.

The time-ball which is a distance from the observatory, about two miles, is controlled by a telegraph key here, in the following manner: At 12.30 p.m. each day (including Sundays) the C.P.R. Telegraph Co. connects our line with the time-ball circuit; at 12.45 p.m. a signal of two taps given from here, notifies the man in charge of the time-ball to hoist it to half-mast at 12.55 p.m., three taps notifies the man to hoist the ball to top and to set the electric trigger. At one-half second to the exact 1 p.m., I press the key here and the ball drops on the true time. This operation is checked daily by watching the ball through a telescope here.

I am pleased to state that all the mechanism in connection with the time-ball was made locally under my supervision and has proved very satisfactory, and particularly the electric trigger, and automatic brake which stops the descent of the ball at the base of the mast.

The true time is also furnished to the Naval authorities when required.

Owing to the war, visitors are not admitted here, but a hearty welcome has always been accorded all our soldiers and their friends, and over 400 have visited this institution.

During the past winter I have given a course of six illustrated lectures, some bearing upon the work of this institution and under the auspices of the Royal Astronomical Society.

In conclusion, I would respectfully urge that, in order to make this institution more efficient, a good Sidereal clock and chronograph be added to our time service, and that the delicate seismographs ordered in Europe before the war be constructed here under my supervision.

F. NAPIER DENISON,
Director, Victoria Observatory

SESSIONAL PAPER No. 21

APPENDIX D.

METEOROLOGICAL OFFICE, TORONTO, April 7, 1916.

R. F. STUPART, Esq., F.R.S.C.,
Director of the Meteorological Service,
Toronto, Ont.

SIR,—I beg to furnish, herewith, a report on the work of the agricultural section for the fiscal year 1915-16.

In October, 1915, my report to you (published in the Annual Report of the Department of Marine for 1914-15, pages 353-6) showed that preliminary studies in 1914 crystallized into definite field experimentation. It appears that in this, supplemented by laboratory investigations under controlled conditions, lies the promise of solving the great problems of agricultural meteorology.

Forms on which to record detailed crop notes for spring wheat were mailed to 14 Dominion experimental stations early in 1915. A copy of this form is enclosed.

Commencing with March, 1915, charts were prepared, representing on one sheet of squared paper the daily maximum, minimum and mean temperatures, the 24-hour precipitation and the total number of hours of bright sunshine. These charts make the weather figures "speak": they show almost at a glance the meteorological conditions at each station for the whole crop season; and they remove in a large degree the complexity of lengthy weather records.

The 14 stations were visited in July and August, 1915.

After harvest of the wheat, the forms were returned to the agricultural section and the crop and weather data were correlated. The average height of the wheat every seven days was shown on the charts, and also periods of development were shown, bounded by such plant activities as appearance above ground, stooling, heading, blossoming, milk stage and maturity.

In concise tables the crop notes were presented in such a form that the facts from the different stations could be easily compared. Also an analysis of the weather was made in tables for the periods of development, no particular emphasis being placed on the calendar date but rather on the stage of plant development; the meteorological conditions at the fourteen stations were thus readily compared on one double page. From the charts and tables notes were prepared on the "wheat and weather" for the entire season at each station. And it should be feasible to publish through some suitable medium enough of the results and methods to be of interest to agriculturists and to reveal the advance of the work.

The use of all these analytical methods was made possible by adapting them from translations of Russian publications, which have been setting forth the results of field experimentation in agricultural meteorology in Russia for the past fifteen years or more.

By a co-operative agreement with the office of experiment stations of the United States, the translation of many of the most valuable Russian publications has proceeded simultaneously at Washington and at Toronto. Copies of all translations are exchanged. Also, Dr. T. K. Doherty, Canadian Commissioner of the International Institute of Agriculture, has translated from the French several articles by Prof. P. Broounoff, Chief of the Russian Bureau of Agricultural Meteorology. Through the kindness of Dr. Doherty these articles, together with the best of those in Russian, will likely become available to Canadians in the Bulletin of Foreign Agricultural Intelligence published by the Dominion Department of Agriculture. And these translated articles should serve to educate and to awaken public interest.

7 GEORGE V, A. 1917

The reference library of this section has grown steadily. Every effort is made to keep in touch with what other workers are doing, and the current publications in agricultural meteorology are recorded on a classified card index. This index has become a bibliography of recent progress in plant physiology, ecology, investigation of plant diseases and of soils, etc., and has been of service in giving to inquirers a list of the literature of that phase of agricultural meteorology in which they may be interested.

Inquiries by letter are increasing in frequency and correspondence is steadily growing. One branch of the latter is the writing of occasional letters to co-workers in science and especially to experimenting botanists with a view to co-operating in laboratory investigations on important farm plants.

It is proposed in 1916 to continue the experimental work of 1915. Observer's forms and instructions have been forwarded to the same stations through Dr. Shutt, Assistant Director of the Dominion Experimental Farms' system. Acknowledgment is due to Dr. Shutt and to Dr. C. E. Saunders, Dominion Cerealists, for their courteous assistance in the development of the field experiments. - The writer is to spend the whole growing season of 1916 at the Central Experimental Farm at Ottawa, in order to be in closest contact with the agriculture and biology of the subject.

At the proper time in the future it is hoped to present a plan for increasing the equipment of instruments and perfecting the experimental methods until approach is made to the remarkable organization of Russia in agricultural meteorology.

Respectfully submitted,

R. W. MILLS,
In charge of agricultural section.

SESSIONAL PAPER No. 21

APPENDIX No. 7.

ANNUAL REPORT OF THE MEDICAL SUPERINTENDENT OF THE
MARINE HOSPITAL SERVICE FOR THE FISCAL YEAR 1915-16.

SICK AND DISTRESSED MARINERS.

Under the provisions of the Canada Shipping Act, chapter 113, part, 5, s. 338, R.S., dues of $1\frac{1}{2}$ cent per ton, registered tonnage, are levied on every vessel entering any port of the province of Quebec, Nova Scotia, New Brunswick, Prince Edward Island, and British Columbia. The money thus collected forms the sick mariners' fund. Vessels of the burden of 100 tons and less, pay duty once in each calendar year, and vessels of more than 100 tons, registered tonnage, three times in each year.

The officers and seamen of all fishing vessels not registered in Canada do not pay sick mariners' dues nor participate in the benefits accruing therefrom; but such vessels registered in Canada may pay dues and participate in the benefits; and if of more than 100 tons, only for the voyage at the beginning of which payment has been made; such vessels shall enjoy the same rights and benefits as are enjoyed by vessels which pay dues and are not engaged in fishing.

The Act, chapter 113, Canadian Shipping, does not apply to the province of Ontario, so no dues are collected from vessels in that province.

PROVINCE OF QUEBEC.

At the port of Quebec, sick mariners are cared for at the Jeffrey Hale and Hotel Dieu hospitals, at a per diem allowance of \$1.50 for each seaman, including medical attendance and board.

At the port of Montreal, sick mariners are cared for at the General and Notre Dame hospitals, the charges at each institution being \$1.50 a day, including board and medical attendance. Infectious and contagious diseases are attended at the Alexandra and St. Paul hospitals.

At the port of Three Rivers, sick mariners are cared for at the St. Joseph's hospital, per diem rate, 90 cents for each seaman. The medical officer receives \$350 per annum for his services.

At the port of Chicoutimi, sick mariners are cared for at the St. Valier hospital; rate, \$1.20 a day for each seaman, including treatment and board.

At the port of St. Johns, the mariners are attended at the St. Johns hospital; rate, 90 cents a day. The medical officer receives a salary of \$600 a year.

At the ports of Rimouski, Montmagny, Sorel and River-du-Loup, sick mariners are attended at the local hospitals, and the medical services are rendered by the port physician.

PROVINCE OF NOVA SCOTIA.

Marine hospitals are maintained at Louisburg, Lunenburg, Sydney, and Yarmouth.

At the port of Halifax, sick mariners are cared for at Victoria General hospital; rate, \$1.50 a day, including board and treatment. Contagious cases are treated at the City Isolation hospital.

7 GEORGE V, A. 1917

At Pictou, sick mariners are taken to the Pictou Cottage hospital; rate, \$1 a day. The medical officer is paid a yearly salary of \$400.

At North Sydney, sick mariners are attended at the Hamilton Memorial hospital; rate, \$1 a day. The medical officer receives a salary of \$750 a year, including drugs supplied.

At Windsor, sick mariners are treated at the Payzant Memorial hospital; rate, \$1 a day. The medical officer receives a salary of \$120 a year.

At Amherst, sick mariners are treated at the Highland View hospital; rate, \$4.50 a week. The medical and surgical services are rendered by the port physician.

At Parrsboro and vicinity, sick mariners are taken to the Cottage hospital at Springhill; rate, \$1.50 a day, including all costs.

At the port of Digby, sick mariners are treated in a designated hospital; rate, \$3 a week, besides a salary of \$50 for the caretaker. The medical officer receives a salary of \$250 a year.

PROVINCE OF BRITISH COLUMBIA.

At Victoria, sick mariners are treated at the St. Joseph's hospital; rate, \$1.50 a day.

At Vancouver, sick mariners are treated at the St. Paul hospital; rate, \$1.50 a day, including all costs.

At Nanaimo, seamen are treated at the Nanaimo hospital; rate, \$1 a day. The medical officer receives a salary of \$600 a year.

At New Westminster, sick mariners are taken to the St. Mary's hospital; rate, \$1.50 a day, including all costs.

At Chemainus and Ladysmith, sick mariners are treated in the local hospitals at the rate of \$1 a day, besides medical and surgical services.

At Prince Rupert, sick mariners are treated in the Prince Rupert General hospital; rate, \$2 a day. The port physician receives a salary of \$500 a year.

PROVINCE OF NEW BRUNSWICK.

A marine hospital is operated and maintained at Douglastown for sick mariners arriving at Chatham, Newcastle, and vicinity. The medical officer receives a salary of \$450 a year, and the keeper \$250 a year.

At St. John, sick mariners are treated in the General Public Commissioners' hospital; rate, \$1.50 a day, including all costs.

At Campbellton, treatment is given at Hotel Dieu hospital; rate, \$5 a week. The medical officer receives a salary of \$350 per annum.

At Moncton, sick mariners are treated at the Moncton hospital; rate, \$4 a week. The medical officer receives a salary of \$200 a year.

PROVINCE OF PRINCE EDWARD ISLAND.

At Charlottetown, sick mariners are treated in the Charlottetown and Prince Edward Island hospitals; rate, \$1.50 a day, including all costs.

At Summerside, sick mariners are treated at the Prince County hospital, rate, \$1 a day. The port physician receives a salary of \$250 a year.

Where no hospital is maintained in any port of the maritime provinces, Quebec, or British Columbia, the collectors of customs are authorized to care for sick mariners entitled to receive the benefits of the fund.

SESSIONAL PAPER No. 21

Statement of receipts and expenditure on account of "Sick and Distressed Seamen" from the fiscal year 1906 to 1915, both inclusive:—

	Receipts.	Expenditure.
	\$ cts.	\$ cts.
1906.	60,183 90	50,120 42
1907.....	44,704 59	34,362 11
1908.....	69,364 45	59,957 92
1909.....	53,732 31	66,349 26
1910....	55,567 41	54,859 50
1911. .	60,637 11	54,779 27
1912.	63,663 41	52,172 75
1913.....	70,540 52	54,294 71
1914.....	72,602 43	65,397 85
1915.....	72,663 80	64,950 36

Total amount of salaries paid to medical officers and keepers during the year 1915-16 was \$15,894.84.

Number of seamen treated was 3,261, compared with 3,030 in the preceding year, while the number of days of hospital treatment was 30,321.

Number of vessels which paid sick mariners dues during the year 1915-16 was 3,068, and the number of men employed on these vessels, 63,552.

TABLE showing Expenditure for Treatment, Board, Supplies, Etc., by Provinces:

	Nova Scotia.	New Brunswick.	P. E. I.	Quebec.	British Columbia.	General Account.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Board in hospitals and private houses.	11,612 08	5,530 74	939 47	11,907 01	5,999 25	
Medical and surgical treatment...	3,803 65	1,398 65	226 85	1,985 30	402 00	
Medical officers and keepers salaries	9,569 84	2,350 00	650 00	1,825 00	1,500 00	
Fuel	913 41	109 88				
Water...	38 50					
Light.	171 69	33 15				
Supplies..	341 13	17 27	13 12			
Telephone service.....	110 83	29 85				
Drugs, instruments, etc..	305 10					
Repairs and maintenance	1,179 05					
Burials..	108 00					
Transportation.....	136 71	8 10	3 00	161 65	20 00	
Special nursing	778 89			12 50	16 95	
Grants.....	300 00	200 00		800 00	400 00	
Medical assistance..	63 00	23 00				
Printing and stationery....						292 79
	29,431 88	9,691 64	1,832 44	16,691 46	8,338 20	292 79

Total expenditure.....	\$ 66,278 41
Amount refunded by Department Naval Service.....	1,634 24
Net expenditure.....	\$ 64,654 17
Amount of appropriations.....	\$ 75,000 00
Amount of expenditure.....	64,654 17
Balance not expended.....	\$ 10,345 83

7 GEORGE V, A. 1917

GRANTS TO SEAMEN'S INSTITUTES.

<i>Nova Scotia—</i>		
Seamen's Society, Halifax, N.S.....	\$ 200 00	\$ 200 00
North Sydney Institute.....	100 00	100 00
<i>New Brunswick—</i>		
Seamen's Mission Society, St. John.....	200 00	200 00
<i>Quebec—</i>		
Seamen's Institute, Montreal.....	200 00	200 00
Catholic Sailors' Club, Montreal.....	200 00	200 00
Catholic Sailors' Club, Quebec.....	200 00	200 00
Seamen's Institute, Quebec.....	200 00	200 00
<i>British Columbia—</i>		
Seamen's Society, Victoria.....	200 00	200 00
Stratheona Institute, Vancouver..	200 00	200 00
Total expenditure.		\$ 1,700 00

During the year 1915-16 the number of letters sent by this office was 1,561; memoranda 513.

C. H. GODIN, M.D.

June 8, 1916.

SESSIONAL PAPER No. 21

APPENDIX No. 8.

REPORT OF WRECK COMMISSIONER.

OTTAWA, June 1, 1916.

A. JOHNSTON, Esq.,
Deputy Minister of Marine,
Ottawa.

Sir:—I have the honour to submit my annual report of investigations and inquiries held during the fiscal year 1915-16, into the causes of wrecks and casualties as well as statements of wrecks and casualties reported as having occurred to British, Canadian and foreign vessels in Canadian waters, and to Canadian vessels in other waters, from January 1, 1915, to December 31, 1915, and of those reported as having occurred in Inland waters during the same period:—

Formal investigations during the year.	34
Preliminary inquiries during the year.....	5
Departmental inquiries during the year.....	1
Total.....	40

During the calendar year 1915 there were 280 casualties reported to the Department, the reported tonnage of same being 234,036, and the damage is approximately estimated at \$1,459,012, while sixty-three lives were lost.

Of this total number of casualties 217 were to coasting and seagoing vessels, the tonnage of same being 181,790, the damage to which is approximately estimated at \$1,084,957, and fifty-three lives were lost; while sixty-three of the casualties were to inland vessels, the tonnage of which was 52,246, the damage to same being estimated at \$374,055, and ten lives being lost.

In 110 cases of casualties to coasting and seagoing vessels, and thirty-seven cases of casualties to inland vessels, the amount of damage is not stated.

Seventy-seven of the casualties to coasting and seagoing vessels, made up of thirty-three steam and forty-four sailing vessels, resulted in total losses, and of this number sixty-one were Canadian, eight British and eight foreign vessels.

Nine of the casualties to inland vessels resulted in total losses, which were all Canadian steam vessels.

I am, sir, your obedient servant,

L. A. DEMERS,
Dominion Wreck Commissioner.

STATEMENT of investigations into wrecks and casualties which occurred to Canadian, British and Foreign vessels, held in Canada during the fiscal year 1915-16.

Name of Ship. Official No.	Registered Port.	Remarks.
A. W. Perry..... 106075.	Halifax.....	On June 8 stranded and lost on Chebucto head, Halifax harbour. Formal investigation was held at Halifax on June 17 before Capt. L. A. Demers, Dominion Wreck Commissioner, assisted by Capt. John Fleming and D. C. Stuart, acting as nautical assessors. <i>Finding.</i> —Accident was due to negligence and carelessness on part of master, Alfred Ellis, whose certificate was suspended for six months.
Alexandria . 85768.	Pictou, Ont.	On August 3 stranded and lost on Scarboro bluff, lake Ontario. Formal investigation was held at Toronto on August 30, before Capt. L. A. Demers, Dominion Wreck Commissioner, assisted by Capts. James McMaugh and John Williams, acting as nautical assessors. <i>Finding.</i> —No one to blame. Master, William Bloomfield, had to beach vessel owing to fury of gale.
Bengore Head..... 90101, and	Belfast.....	On August 1 collided off cape Salmon, river St. Lawrence. Formal investigation was held at Quebec on August 13, 14 and 16, before Capt. L. A. Demers, assisted by Capt. Francis Nash and Capt. James Murray, acting as nautical assessors.
Batiscan..... 131314.	Liverpool.	<i>Finding.</i> — <i>Batiscan</i> is entirely to blame for collision. Master's certificate of Capt. G. Gardner Green is suspended for two years. Pilot Jules Lachance partly to blame for bad seamanship, and is fined \$300. Pilot of <i>Bengore Head</i> , Alfred Raymond had his license cancelled for having deserted his post immediately after collision.
Christine . . 86714, and H 1.	Ottawa	On May 18 collided at about half a mile west of St. Jean wharf, isle of Orleans. <i>Christine</i> was sunk and six lives were lost. Formal investigation was held at Montreal on May 26, 27, 28 and June 2, and at Quebec on June 1, before Capt. L. A. Demers, assisted by Capt. Francis Nash and Capt. Montague Yates, acting as nautical assessors. <i>Finding.</i> —Captain of <i>Christine</i> , Walter S. Kennedy is chiefly to blame for accident, and his certificate was suspended for one year. Captain of <i>H 1</i> , S. R. Smith, is reprimanded for not exercising proper judgment when risk of collision appeared imminent; but court has no jurisdiction over his certificate as he is an American citizen with a license from United States Government.
Capilano . 100203.	Vancouver.	On April 7 second officer, Johnston Gilchrist, received injuries on board which subsequently resulted in his death. Formal investigation was held at Vancouver before Capt. John D. Macpherson, assisted by Capt. Cecil W. Wearmouth and Capt. Alex. N. Dick, acting as nautical assessors, on June 3. <i>Finding.</i> —No one is to blame. Mr. Gilchrist met death through an inevitable and unavoidable accident while performing duties assigned to him.
Cheltonian..... 132649.	London.....	On May 23 stranded off cape Ray, Newfoundland. Preliminary inquiry was held at Sydney on June 5, before Mr. Vincent Mullins, and a formal investigation held at Halifax on June 18 before Capt. L. A. Demers, assisted by Capt. John Fleming and Capt. D. C. Stuart, acting as nautical assessors. <i>Finding.</i> —Capt. R. Jones is censured for not having taken frequent soundings, and not having ascertained the exact position of his vessel, when Bird rock was not seen, nor the whistle heard; but

SESSIONAL PAPER No. 24

STATEMENT of investigations into wrecks and casualties which occurred to Canadian, British and Foreign vessels, held in Canada during the fiscal year 1915-16—*Continued.*

Name of Ship. Official No.	Registered Port.	Remarks.
Cabot ... 125988.	Montreal.....	he is complimented for his subsequent action in saving the ship and bringing her to Sydney, and subsequently to Halifax for repairs. On June 24 foundered in Northumberland strait, about 13 or 14 miles south of East point, Prince Edward Island. Formal investigation was held at Sydney on July 14, before Capt. L. A. Demers, assisted by Capt. R. MacDonald and Capt. A. G. Morrison, acting as nautical assessors. <i>Finding.</i> —Accident was caused by ship leaving port without tanks being filled, whilst vessel had a cargo. Certificate of master, James Lintlop, is suspended for three months.
H.M.S. Carnarvon and Scotsman 116114.	Halifax.....	On September 16 collided in Halifax harbour. Formal investigation was held at Halifax on September 27 and October 5, before Capt. F. N. Malcolm, assisted by Capt. John Fleming and Capt. D. C. Stuart, acting as nautical assessors. <i>Finding.</i> —Captain of <i>Carnarvon</i> , Hugh Thomas Hibberts, solely to blame, as he violated art. 28 of Rules of Road by not taking precautions required by ordinary practice of seamanship. Master Gordon Innis, and crew of <i>Scotsman</i> , exonerated from all blame. One assessor, Capt. Fleming, disagreed, and finds master of <i>Scotsman</i> alone to blame.
Calchas. 110586.	Liverpool	On October 9 stranded off point Wilson, Puget sound, B.C. Formal investigation was held at Victoria on November 2, before Capt. John D. Macpherson, assisted by Capt. A. M. Davis and Capt. F. Anderson, acting as nautical assessors. <i>Finding.</i> —No one was to blame. Stranding due to abnormal drift of ebb tide setting vessel off her course during dense fog, and fog alarm on point Wilson working improperly.
Capilano 100203.	Vancouver	On October 1 foundered off Mipplemac island, B.C. Formal investigation was held at Vancouver on October 22, before Capt. John D. Macpherson, assisted by Commander C. Unwin and Capt. James Abernethy, acting as nautical assessors. <i>Finding.</i> —Foundering was directly due to striking some submerged obstruction. Master, Samuel Nelson, is severely censured for not being on bridge under existing condition of weather—dark and thick smoke—but on account of his good record his certificate was not dealt with. Acting second-mate, Fletcher Hemmonds, blamed for not having called the master under circumstances; but as he possesses no certificate court cannot deal with him.
Constance 94899.	Vancouver...	On October 3 foundered in the gulf of Georgia. Formal investigation was held at Vancouver on November 17 and 18, before Capt. John D. Macpherson, assisted by Commander C. Unwin and Capt. R. C. Procter, acting as nautical assessors. <i>Finding.</i> —Loss of vessel solely due to lack of judgment and prudence of master, and being improperly loaded. Certificate of master, Harry Smith, suspended for three months.
Camosun 121204.	Vancouver..	On March 10 stranded on Digby island, Prince Rupert, B.C. Formal investigation was held at Victoria on March 28, before Capt. John D. Macpherson, assisted by Capt. Robinson Ridley and Capt. Henry Parsons, acting as nautical assessors. <i>Finding.</i> —No one to blame. Stranding due to abnormal current.

7 GEORGE V, A. 1917

STATEMENT of investigations into wrecks and casualties which occurred to Canadian, British and Foreign vessels, held in Canada during the fiscal year 1915-16—*Continued.*

Name of Ship. Official No.	Registered Port.	Remarks.
Charmer.. 100793, and Quadra.... 96899.	Victoria Ottawa.	On February 26, collided at entrance of Nanaimo harbour, and <i>Quadra</i> was sunk. Formal investigation was held at Nanaimo on March 6 before Capt. John D. Macpherson, assisted by Capt. W. E. Gardner and Capt. R. Ridley, acting as nautical assessors. <i>Finding.</i> —Master of <i>Quadra</i> , E. Leblanc, solely to blame for collision, not observing the Rules of the Road. He is severely reprimanded; but his certificate is not dealt with. One assessor, Captain Gardner, dissented, holding that <i>Charmer</i> contributed to collision.
Frankier 122850.	London	On December 10 stranded 4 miles south of Cranberry island, N.S. Formal investigation was held at Halifax on March 2. before Capt. L. A. Demers, assisted by Capt. John Fleming and Capt. D. C. Stuart, acting as nautical assessors. <i>Finding.</i> —Master, John Trattles, showed indifference in navigating his ship, and his certificate was suspended for three months. Mate, Thomas George, failed in his duty in not calling master and meanwhile adopting means of safety. His certificate was suspended for two months.
Georgeina Roop 112604	Annapolis Royal...	On April 5 stranded at Bon Portage, N.S. Preliminary inquiry was held at Yarmouth on April 8, before Capt. John E. Murphy. The decision arrived at was that the vessel dragged her anchor on account of bad weather and treacherous nature of holding ground.
Glenmount... 122408.	Montreal	On April 30 stranded off shoal, Round island, river St. Lawrence. Formal investigation was held at Kingston on May 7 before Capt. L. A. Demers, assisted by Capt. Thomas O'Connor and Capt. James Murray acting as nautical assessors. <i>Finding.</i> —Pilot Frank Patenaude is held to blame for carelessly navigating ship; but as he is not a licensed pilot his certificate cannot be dealt with. Second officer Lewis Dicks is censured for having left bridge. Master exonerated.
Gopher..... 131308, Picket boat of H.M.S. Levithan.	Liverpool	On September 7 collided in Bedford basin, Halifax harbour, and three lives lost. Formal investigation was held at Halifax on September 15, 16 and 17, before Capt. F. N. Malcolm, assisted by Capt. John Fleming, and Capt. D. C. Stuart, acting as nautical assessors. <i>Finding.</i> —Picket boat of <i>Levithan</i> was entirely in fault. Officer in charge did not display sufficient knowledge of good seamanship as regards Rules of the Road.
Goliah 75819, and Bon Ton... 131211.	Halifax .. Sydney.	On August 4 collided in Halifax harbour. Formal investigation was held at Halifax on October 6, 7, 8, and 9, before Capt. F. N. Malcolm, assisted by Capt. John Fleming and Capt. D. C. Stuart acting as nautical assessors. <i>Finding.</i> —Captain of <i>Bon Ton</i> , Banks Rudderham, is solely to blame for collision and his certificate is suspended for three months. Master of <i>Goliah</i> , Ernest Wells, is exonerated from all blame.
Haddington 14367.	Toronto. . .	On June 2 stranded on Red island reef, river St. Lawrence. Preliminary inquiry was held at Quebec on June 5 before Mr. H. S. McGreevy, and a formal investigation held at Kingston on July 8, before Capt. L. A. Demers, assisted by Capt. Thomas O'Connor and Capt. James Murray, acting as nautical assessors.

SESSIONAL PAPER No. 21

STATEMENT of investigations into wrecks and casualties which occurred to Canadian, British and Foreign vessels, held in Canada during the fiscal year 1915-16—*Continued.*

Name of Ship. Official No.	Registered Port.	Remarks.
Henry B. Hall... 100278.	Ogdensburg	<p><i>Finding.</i>—Master R. J. Wilson, and first officer, Ernest Shannon, exonerated from blame. Proper seamanship and good judgment were not exercised by sailing master, Joseph Blais, who was in full command of ship at the time of the accident, and his certificate is suspended for four months, and an additional two months for contempt of court.</p> <p>On June 10 stranded near Stone Pillars light, river St. Lawrence. Formal investigation was held at Montreal on June 23 before Capt. L. A. Demers, assisted by Capt. Francis Nash and Capt. J. C. Cain, acting as nautical assessors.</p> <p><i>Finding.</i>—Stranding was due to carelessness and neglect on part of pilot Lucien Lachance, whose license is suspended for one year.</p>
Harmatris ... 135169.	London	<p>On November 6 stranded near Cap a la Roche, river St. Lawrence. Formal investigation was held at Quebec on November 20 before Capt. L. A. Demers, assisted by Capt. James A. Murray and Capt. Charles Koenig, acting as nautical assessors.</p> <p><i>Finding.</i>—Accident caused by mistake on part of donkeyman, Charles Campbell, in shutting off wrong steam valve. Master, pilot and chief engineer exonerated.</p>
Kansan and Pretorian.... 113969.	American Glasgow.	<p>On September 10 collided off White Island lightship, river St. Lawrence. Formal investigation was held at Montreal on September 27, 28 and 29, before Capt. L. A. Demers, assisted by Capt. Francis Nash and Capt. J. O. Grey, acting as nautical assessors.</p> <p><i>Finding.</i>—Captain, officers and pilot of <i>Pretorian</i> were exonerated from all blame. Pilot W. Langlois of <i>Kansan</i> did not use all prudence required of him; but owing to his previous good record is only fined \$100. Master and officers are to blame, not being strangers in these waters they relied upon the pilot.</p>
Kenkon Maru No. 3. ...	Japanese	<p>On January 12 stranded on Bell Chain reef, Saturnia island, gulf of Georgia. Formal investigation was held at Mayne island, B.C., on April 10 and 11, 1916, before Capt. John D. Macpherson, assisted by Capt. Robinson Ridley and Capt. Henry Parsons, acting as nautical assessors.</p> <p><i>Finding.</i>—Stranding was due to action of Nanaimo pilot, James Edgar Butler, who was fined the cost of investigation, \$230.</p>
Lady of Gaspé ... 78554.	Quebec.	<p>On October 13 stranded 1½ miles below Quebec bridge. Formal investigation was held at Quebec on October 20, before Capt. L. A. Demers, assisted by Capt. Charles Koenig and Capt. L. R. Demers, acting as nautical assessors.</p> <p><i>Finding.</i>—Stranding was due to lack of prudence and to bad navigation on part of master, J. R. Deslauriers, and his certificate is suspended for one year; but court recommends that a mate's certificate be granted to him from April 1 to expiration of his suspension.</p>
Leona..... 122951.	Goole	<p>On October 30, foundered near Active pass, gulf of Georgia, and six lives were lost. Formal investigation was held at Victoria, on November 29 and 30, before Capt. John D. Macpherson, assisted by Capt. W. Wingate and Capt. R. N. Walker, acting as nautical assessors.</p> <p><i>Finding.</i>—Foundering was due solely to the fact that vessel was loaded with cargo of a most dangerous nature which owing to an excessive percentage</p>

7 GEORGE V, A. 1917

STATEMENT of investigations into wrecks and casualties which occurred to Canadian, British and Foreign vessels, held in Canada during the fiscal year 1915-16—*Continued.*

Name of Ship. Official No.	Registered Port.	Remarks.
Matatua 114599	Southampton	of moisture, and vibration of vessel, shifted, causing vessel to take heavy list and allowing water to find its way, not only into vessel's hold but also into ballast tanks. On March 11 damaged by fire in St. John harbour, and master lost his life. Formal investigation was held at St. John, on March 20 and 21, and April 4, before Capt. L. A. Demers, assisted by Capt. T. J. Mulcahy and Capt. D. L. Kenny, acting as nautical assessors. <i>Finding.</i> —Origin of fire is unknown. Master's death was accidental. Second officer, Bolan Ellison, was censured for breach of discipline.
Point Hope and Launches		On June 9 collided at Point Ellis boathouse, B.C. Departmental inquiry was held at Victoria on June 25, before Capt. G. E. L. Robertson. Decision arrived at was that no one was to blame. Accident was inevitable and caused by some temporary defect in machinery which failed to respond at the right moment.
Potomac. 102798.	London	On February 19 stranded at Holy Stone rock, entrance to Halifax harbour. Formal investigation was held at Halifax on February 28, before Capt. L. A. Demers, assisted by Capt. John Fleming and Capt. D. C. Stuart, acting as nautical assessors. <i>Finding.</i> —Master, Ernest Charles Tudway, was severely reprimanded for his timidity and lack of prudence and judgment.
Pilot 88303.	Quebec	On January 19 stranded on Red island, St. Lawrence river. Formal investigation was held at Quebec on March 24, before Capt. L. A. Demers, assisted by Capt. Charles Koenig and Capt. L. R. Demers, acting as nautical assessors. <i>Finding.</i> —Stranding was due to error of judgment on part of master, Arthur Deschenes, who is reprimanded and cautioned to exercise better judgment in future. Court is also of opinion that mate, Joseph Deschenes, had not sufficient knowledge to assist master.
Romney.... 110532.	Liverpool	On June 24 stranded near Green Island lighthouse, river St. Lawrence. Formal investigation was held at Quebec on June 29, before Capt. L. A. Demers, assisted by Capt. Francis Nash and Capt. James Murray, acting as nautical assessors. <i>Finding.</i> —Master, Thomas Moss, was exonerated from blame. Pilot Jules Lachance's license was suspended for six months for his lack of attention to duty, mistaking Green Island light for Red Island light. Second officer, A. G. Cooper, severely reprimanded for his indifference in navigating ship and cautioned to be more careful in future.
Romera 129424.	Glasgow	On August 16 stranded near cape Dog, river St. Lawrence. Formal investigation was held at Montreal on August 27, before Capt. L. A. Demers, assisted by Capt. Francis Nash and Capt. J. Black, acting as nautical assessors. <i>Finding.</i> —Pilot, Arthur Lachance, alone is to blame, and he is fined \$100. His certificate is not dealt with on account of his good record and long period of service.
Sir Hugh Allan 130534, and De Levis 126842.	Montreal Quebec.	On August 21 collided one mile above Point Citrouille light, river St. Lawrence. Formal investigation was held at Montreal on September 30 and October 8, before Capt. L. A. Demers, assisted by Capt. J. O. Grey and Capt. Charles Lapierre, acting as nautical assessors.

SESSIONAL PAPER No. 21

STATEMENT of investigations into wrecks and casualties which occurred to Canadian, British and Foreign vessels, held in Canada during the fiscal year 1915-16—*Concluded.*

Name of Ship. Official No.	Registered Port.	Remarks.
Silver Wings..... 118498.	London	<p><i>Finding.</i>—Collision is due to default of master of each vessel failing to carry out Art. 28 of Rules of Road. Master of <i>Sir Hugh Allan</i> Raphael Chevrier's certificate was suspended for one year. Certificate of master of <i>De Levis</i>, J. B. Blais, was cancelled, and certificate of second engineer of <i>De Levis</i>, Leon Crepeau, was also cancelled, for having abandoned his post to flee on deck of other boat after collision.</p> <p>On August 18 stranded on Sable island. Preliminary inquiry was held at Halifax on August 24, before Capt. F. N. Malcolm, and a formal investigation held at Halifax on August 27 and 28, before Lieut. Graham C. Holloway, assisted by Capt. Neil Hall and Capt. D. C. Stuart, acting as nautical assessors.</p>
H.M.S. Sydney and Dartmouth..... 90889.	Halifax.	<p><i>Finding.</i>—Master, Edward O'Toole, is at fault for not having used lead, and for reckless navigation, and his certificate is suspended for one year. Mate, Thomas Jones, is found to have kept log in a very slack manner, taking no interest in the navigation of his ship, and he is also found at fault for not realizing responsibility of his position as mate, and his certificate is suspended for three months.</p> <p>On August 25 collided in Halifax harbour. Formal investigation was held at Halifax on September 11, 13 and 14, before Capt. F. N. Malcolm, assisted by Capt. D. C. Stuart and Capt. John Fleming, acting as nautical assessors.</p>
Senlac..... 112239.	St. John.....	<p><i>Finding.</i>—No one is to blame, accident unavoidable.</p> <p>On December 14 burnt in Sydney harbour. Preliminary inquiry was held at Sydney, N.S., on December 28, by Mr. Vincent Mullins. Origin of fire unknown.</p>
Wahcondah..... 102577, and Choctaw.	Hamilton..... American.	<p>On July 12 collided in lake Huron. Formal investigation was held at Kingston on July 28, before Capt. L. A. Demers, assisted by Capt. James Murray and Capt. William Murphy, acting as nautical assessors.</p> <p><i>Finding.</i>—Master and mate of <i>Wahcondah</i>, Cornelius Dineen and David Chambers, respectively, contributed to collision, Master for not being at his post in thick weather, and for allowing his vessel to go full speed in fog; the mate for not stopping ship when hearing signal from <i>Choctaw</i>, and not calling captain sooner. Master's certificate suspended for a year, and mate's certificate suspended for same period.</p>
Wakena..... and Venture 129475.	American..... Victoria.	<p>On February 25 collided in First narrows, Burrard inlet. Formal investigation was held at Vancouver on March 17, before Capt. John D. Macpherson, assisted by Commander Charles Unwin and Capt. H. G. Hilton, acting as nautical assessors.</p> <p><i>Finding.</i>—<i>Wakena</i> alone is to blame. Master lost his bearings in thick fog, and while endeavouring to put his vessel in mid-channel collided with <i>Venture</i>.</p>

STATEMENT of wrecks and casualties reported as having occurred to British, Canadian and Foreign vessels in Canadian waters and to Canadian vessels in other waters, from January 1 to December 31, 1915.

SEA GOING WRECKS.

Date of Casualty.	Name of Ship. Official No.	Age of Ship Years.	Registered Port.	How rigged. Iron or wood. Steam or sail.	Register Tonnage.	Port sailed from. Port bound to.	Place where casualty happened.	Particulars of Casualty. Name of Master.	Lives lost.	Loss. Total or Partial.
Feb.	Artemis 113276	16	Southampton	...	55		North Atlantic.	Damaged in gale.		Part, \$9,893.
Mar. 18	Alberni 126072	8	Vancouver	Steam. Tug... Wood	19-07	Vancouver Active Pass.	Active Pass, B.C.	Foundered. E. McMullen.		Total, \$4,000.
Mar. 27	Adonis 111999	11	Bridgetown, Bdos	Steam. Schr... Wood Sail	316	St. John, N.B. Cork, Ireland.	Lat. 39° 20' Long. 57° Nfld. Banks	Foundered. A. J. Brown.		Partial, \$2,000.
May 3	Athens 92498	24	Windsor, N.S.	Schr. Wood Sail	663	Mobile, Ala Barcelona, Spain.	Lat. 23° 48' N. Long. 66° 12' W. N. Atlantic.	Foundered. J. Hunter.		Total.
June 4	Alloha		Gloucester, Mass.	Schr. Wood Sail	130	Gloucester Fishing.	Lat. 49° 26' N. Long. 64° 12' W. N. Atlantic.	Burnt. J. Fitzgerald.		Total.
June 8	A. W. Perry 106075	18	Halifax	F. & A... Steel	957	Boston, Mass Halifax.	Chubucto Head, N.S.	Stranded A. Ellis.		Total, \$100,000.
June 13	Avis 103745	19	Quebec	Steam. Schr. Wood. Sail	100	Quebec Anse Pleureuse, P.Q.	Between Mont-Louis and Anse Pleu- reuse.	Upsized W. Carre.	3	Partial.
June 14	Athenia 119121	11	Glasgow	Schr... Steel	5,523	Glasgow... Quebec.	Quebec harbour	Collided with "Que- bec" James Black.		Partial.
June 20	Alexina Theriault. 130514	1½	Weymouth, N.S.	Steam. Schr... Wood	199	Halifax New York.	Lat. 35° 37' N. Long. 58° 20' W. N. Atlantic.	Damaged by heavy seas. Art. Boucett.		Partial. 1,290
June 23	A. D	17	Quebec	Barge... Wood Sail	462	Murray Bay... Ogdensburg.	Crane island...	Foundered... M. Leboeuf.		Total.
July 11	Agnorina... 115124	14	W. Hartlepool...	Schr... Steel Steam	1,931-41	Cardiff Cardiff.	Off Newfoundland.	Collided with ice- berg. W. D. Kirkwood.		Slight.

SESSIONAL PAPER No. 21

Aug.	24	Anglo Brazilian 132711	3	London ...	Schr.	4,618 Cardiff... Liverpool	Montreal harbour...	Damaged by fire. Alex. Livingstone.	Slight.
Sept.	27	Alma 107550	17	St. John, N.B.	Steel Steam Schr.... Wood Sail.	70 Parrsboro.....	Off Partridge id	Damaged in gale.... A. W. Ogilvy.	Partial, \$200.
Oct.	18	Alliance No. 2 133773	27	Victoria	Steam	46	Malpas rock, B.C.	Foundered	Total.
Nov.	10	Annie E. Parker			Sail.		Indish, N.B	Stranded	Partial.
Nov.	15	Alma 107550	17	St. John, N.B.	Schr. Wood Sail	70 Parrsboro	Minas channel.	Stranded A. W. Ogilvy.	Partial, \$400.
Nov.	25	Amelie 130243	5	Liverpool, N.S. . .	Schr. Wood Sail	148 Gaspe . . . Barbadoes.	Lat. 43° 53' N. Long. 61° 31' W. N. Atlantic. Coal harbour. B.C.	Deckload carried away. Ernest Wilkie. Steam pipe fractur- ed, lost life boats. R. Mance. Burnt	Partial.
Feb.	15	Baku Standard 101968	22	Swansea	Schr. . Steel	2,375 Port-mouth... (Queenstown.			Partial. \$1,000
		B.B. 126881		Vancouver..	Launch. Wood Gas	17.12			Partial, \$2,500.
Mar.	27	Bertha. 77789	34	Port Medway . . .	Schr.... Wood. Sail	42 Chester . . (Chester.	Nova Scotia coast...	Sprang a leak.... R. H. Corkum.	Partial, \$200.
Aug.	1	Batiscan. . . 131314	5	Liverpool	Schr.... Steel Steam	2,639 Palmouth, Eng Montreal.	4 miles inwards from cape Dog.	Collided with <i>Ben- gore Head</i> . G. G. Green.	Partial, \$30,000..
Aug.	1	Bengore Head 90101	31	Belfast . . .	Iron Steam	1,619 Belfast Belfast.	Off Hare island shoal	Collided with <i>Batis- can</i> . G. A. Johnston.	Partial.
Nov.	1	Buena. 122288	5	Shelburne, N.S	Schr.... Wood Sail	283 Turks Island Bucksport, Me.	East Chop, near Vineyard haven.	Stranded.	Slight.
Nov.	16	Ben. C. Smith.. 130468	5	Lunenburg	Schr.... Wood Sail	99 St. John's..... Oporto.	Lat. 44' N Long. 4' W. N. Atlantic.	(Cargo jettisoned... John C. Corkum.	Partial, \$3,105.
Jan.	30	Chebueto. . . 108683	18	Halifax..	Ferry.... Steel Steam	260-32 Halifax... Halifax..	Halifax harbour....	(Collided with <i>Mor- vena</i> . N. W. Allen.	Partial, \$750.
Mar.	18	Calburga 90478	25	Maitland..	Bqt .. Wood. Sail	1,350 Halifax.... Liverpool.	Lat. 41° 10' N. Long. 58° 18' W. N. Atlantic.	Deck load carried away. D. F. Douglas.	Slight.
Mar.	—	Cape Breton . 97808		Montreal	F. & A... Steel. Steam	1,108 Halifax.... Louisburg.	Between Canso and Louisburg.	Propeller blades broken. James Kemp.	Partial, \$1,250.
Apr.	12	Calburga 90478	25	Maitland...	Bqt Wood Sail	1,350 Halifax.... Liverpool.	Off New Brighton river Mersey, L'V'L.	Loss of anchor chain David Faulkner.	Partial.

STATEMENT of wrecks and casualties reported as having occurred to British, Canadian and Foreign vessels in Canadian waters and to Canadian vessels in other waters, from January 1 to December 31, 1915—*Continued.*

SEA GOING WRECKS—*Continued.*

Date of Casualty.	Name of Ship. Official No.	Age of Ship. Years.	Registered Port.	How Rugged. Iron or wood. Steam or sail.	Register. Tonnage.	Port sailed from. Port bound to.	Place where Casualty happened	Particulars of Casualty. Name of Master.	Lives lost.	Loss. Total or Partial.
May 18	Christine 86714	34	Ottawa	Schr Iron Steam	94 88	Quebec Quebec	Near St. Jean L. H. Orleans island	Sunk by H. L. W. S. Kennedy.		Partial.
May 19	Charmer 100793	29	Victoria	Schr Steel. Steam	496 58	Vancouver Comox	Nanaimo harbour	Stranded Chas. Campbell.		Partial.
May 27	Cheltonian	4	London	Schr Steel Steam	2,762	Montreal London.	Cape Ray, Nfld	Stranded P. Jones.		Partial.
June 24	Cabot 125988	8	Montreal	Steel Steam	162	Charlottetown Sydney, N. S.	East Pt. of P.E.I.	Foundered Jas. Lintop		Total.
July 9	Collector	14	Gaspe	Schr Wood Sail	99	Gaspe Magdalen islands.	Griffin cove Gulf St. Lawrence	Foundered J. Levesque.		Total: Ship, \$3,000. Cargo, \$500. Total.
July 26	Cimba	37	Frederickstad.	Barge Iron Sail	1,032	Liverpool Matane	1 mile W. of pt. des Mont.	Stranded H. B. Eriksen.		None.
Sept. 15	Cascapedia 104632	20	Quebec	Schr Steel Steam	1,185	Montreal Montreal.	Buoy No. 113 L. head of L. St. Peter.	Stranded John Hearn.		Total, \$25,000.
Oct. 1	Capilano 100203	23	Vancouver	Sloop Steel Steam.	157 18	Vancouver Campbell River.	5 miles W. of Har- wood id. str. of Georgia.	Foundered S. Nelson.		Total Ship, \$7,500. Cargo, \$800 Partial.
Oct. 2	Constance 94899	25	Vancouver	Sloop Steel Steam.	30	Vancouver Turnbull Cove	1 mile S. of Trail id	Foundered Harry Smith.		Partial.
Oct. 9	Calchas 110586	16	Liverpool	Schr Steel. Steam.	4,278	Glasgow Seattle.	Pt. Wilson, Wash.	Stranded Robt. I. Jones.		Partial.
Nov. 12	City of Seattle, 126635	25	New York	Iron Steam	827	Seattle Prince Rupert.	Greenville channel, B.C.	Stranded R. B. McGillvray		Partial.

SESSIONAL PAPER No. 21

Nov.	13	Calburga 90478	25	Maitland.....	Bqte Wood Sail 3 masts. Steam	1,350 Halifax Liverpool.	N. Atlantic	Abandoned W. D. Nelson.	Total.
Nov.	25	Carelmapu	38	Chilian	3 masts. Steam	Honolulu Pt. Townsend.	Off Gowland rocks, B.C.	Foundered F. Desolmes.	18 Total.
Dec.	4	Carlton 122834	10	Newcastle-on- Tyne.	F. & A. Steel Steam	4,043 Marseilles Queens-town.	Lat. 41°00' N. Long. 04°14' W. North Atlantic.	Damaged by fire G. W. Henderson	Partial: Ship, \$7,000. Cargo, \$45,000. Partial.
Dec.	27	Coban 86071	33	Montreal	Schr.. Iron Steam	689 Louisburg Placentia, Nfld	Placentia beach. Nfld.	Stranded A. MacPhail.	Partial.
Jan.	12	Desola 84134	34	Montreal	Schr.. Iron Steam	1,864-45 New York Ardrossen.	250 miles S. of St. John's, Nfld.	Damaged by heavy seas. Jas. Durie.	Partial.
Jan.	28	Doncella 131034	5	Vancouver	Ferry. Wood Gas	18-57 Vancouver Vancouver.	Burrard inlet.	Damaged by fire W. H. Kennett.	Partial, \$15.
Mar.	4	Desola. 84134	34	Montreal....	Schr.. Iron Steam	1,864-45 New York New York.	Har. of St. John's, Nfld.	Burnt Jas. Durie.	Total.
Apr.	13	Dora 90871	29	Parrsboro.....	Schr.. Wood Sail	63 St. John, N.B. Bass River, N.S.	Parrsboro river	Tilted when tide eb- bed. L. B. Canning.	Partial, \$100.
June	27	Donzella 85344	33	Charlottetown.	Schr.... Wood Sail	99-18 Charlottetown Sydney, N.S.	Guiois island, N.S.	Stranded. Joshua Whittel.	Total.
Aug.	5	Dora 90871	29	Parrsboro.	Schr.. Wood Sail	63 St. John, N.B. Parrsboro.	Off Back river, N.B.	Burnt L. B. Canning.	Total, \$800.
Dec	11	Dundee 112208		Hamilton	Schr.. Steel Steam	1,431 Maryport, Eng. Sydney, N.S.	Lat. 47° 14' N. Long. 14° 07' W. N. Atlantic.	Boiler cracked. R. N. Anderson.	Partial
May	6	Empress of Fort William. 125443	7	Newcastle	Schr.. Steel Steam	1,382-80 Montreal. Sydney.	Lat. 46° 17' N. Long. 59° 59' 30" W Glace Bay, N.S.	Damaged by ice S. Nelson.	Partial.
May	27	Elmer 17740	37	Digby, N.S.	Schr.. Wood Sail	15 Digby, N.S. Fishing.	Parker's Cove, N.S. Bay of Fundy.	Stranded Harry White.	Total, \$500.
May	31	Empress No. 4. 134447	14	Montreal	Barge. Wood Sail	120-86	Montreal harbour	Foundered	Total: Ship, \$5,500 Cargo, \$100 None
July	17	Elsie Birdlett. 134395	1	Lunenburg.	Schr.. Wood Sail	90 Mahone Bay. Queensport, N.S	Chebueto bay, N.S	Stranded Archie Wentzel.	Partial, \$3,750.
Aug.	13	E. A. Sabean 90839	14	Port Medway.	Schr.. Wood Sail	249 Sabine's, Texas Kingston, Jamaica	Lat. 21° 15' N Long. 23° 20' W Caribbean sea.	Masts and rigging carried away.	Partial, \$1,000.
Aug.	16	Edna V. Pickles 112003	10	Annapolis Royal	Schr.. Wood Sail	388 Galveston, U S. Do.	Galveston roads	Stranded N. W. Boddan.	Partial, \$1,000.

STATEMENT of wrecks and casualties reported as having occurred to British, Canadian and Foreign vessels in Canadian waters and to Canadian vessels in other waters, from January 1 to December 31, 1915.—*Continued.*

SEA GOING WRECKS—*Continued.*

Date of Casualty.	Name of Ship, Official No.	Age of Ship, Year	Registered Port.	How Rigged.	Regis-tered Tonnage.	Port sailed from, Port bound to.	Place where Casualty Happened.	Particulars of Casualty, Name of Master.	Lives Lost.	Loss, Total or Partial.
Sept. 13	Etta White	44	Vancouver	Sloop Wood Steam	82 40	Vancouver	Hinds' ship, Gore Ave.	Damaged by fire R. Armstrong.		Partial.
Sept. 26	Essington							Missing		Total.
Oct. 7	Else, 207475	6	Boston.	Steam Schr. Wood Sail	88	N. Sydney, St. John, N.B. Gloucester Fishing.	Lat. 40° N. N. Atlantic.	Loss of sails... A. F. McLean.		Partial, \$500.
Oct. 16	Elola, 126329	8	Vancouver..	Wood Gas Schr.. Wood Sail	22	Prince Rupert, Fishing.	1 m. N. of Id. pt., B.C.	Burnt H. G. Estey.		Total.
Nov. 7	Ellen Mary, 72060	37	Shelburne...	Gas Schr.. Wood Sail	45	Halifax Halifax	4 m. E.N.E. from Lockport	Collided with Schr. R. L. McKenna King Perry.	Partial: Ship, \$400. Cargo, \$400. Total.	
Nov. 10	Empress, 107761	14	Bridgetown, W.I.	Schr.. Wood Sail	355 31	Bridgewater New York.	Barrington passage.	Burnt. Ernest Anderson		Total.
Dec. 2	Edward Hall, No. 1 116957		Sarnia.	Dredge. Steam Schr.. Wood Sail			Rocky point, P.E.I.	Burnt H. MacMillan.	Total.	
Dec. 2	Elizabeth		France				Green cove, N.S.	Foundered	Total.	
Feb. 4	Fleetly	6½	Bridgetown	Schr...	174 71	Lunenburg St. John's.	Lat. 42° 46' N. Long. 51° 53' W N. Atlantic.	Foundered... Archie Loames.	Total:	Ship, \$9,000. Cargo, \$950. Partial, \$3,000.
Feb. 19	Florence Rile, 101934	22	Dublin.	Sail F. & A Iron Steam Schr...	2,185	Newhaven Queenstown.	Lat. 39° 10' N. Long. 60° W., N. Atlantic.	Damaged by seas. Thomas Fearn.	1	
Sept. 13	Favourite, 107054	15	Liverpool, N.S.	Schr.. Wood Sail	28	Whitehead, Fishing.	6 m. S.E. of Beaver Har. light	Foundered. Joe Corkum.		Total, \$1,000.
Oct. 14	Florence M, 92638	29	Quebec	Schr.. Wood Sail	84	St. Anne des Monts	Trinity bay	Stranded Joe Simard		Total.

SESSIONAL PAPER No. 21

Oct.	26	F. Dupres. 116593	11	Montreal	Steel Steam	70	Montreal Sorel	Lavaltrie Range lights.	Collided with <i>Ida E</i>	Partial.
Nov.	20	Forbin. 2063	3	St. Malo, France.	Wood Sail	97	St. Malo. Grand River.	Cape cove, Gaspe...	Stranded Louis Pew.	Total, \$10,000.
Dec.	10	Frankier. 122850	9	London	F. & A. Steel Steam	2,443	Portland, Me Dunston, Eng..	Near Canso, N.S....	Stranded G. Trattles.	Partial: Ship, \$18,000. Cargo, \$6,000. Total, \$800.
Mar.	16	Gavilen 134108	7	Vancouver...	Launch. Wood Gas	5-49		Burrard inlet, B.C.	Burnt...	
April	5	Georgeina Roop. 117113	9	Annapolis Royal	Schr.... Wood Sail	424		Bon Portage island, N S	Stranded C. S. Richard.	Partial ship; Total cargo.
Aug.	4	Boliah 78819	52	Halifax...	Tug.... Steam	100		Halifax harbour.	Collided with <i>Bon Ton.</i>	Partial.
Aug.	17	Geo 139056	1	London	Schr.... Steel Steam	1,924	Brixham Chicoutimi.	Cape East Anticosti.	Stranded... H. Perry	Partial.
Aug.	30	Georgia.... 116931	15	Vancouver	Wood Steam	23-36	Butedale, B C. Gardner canal.	Off Bishop's cove, B C	Burnt Thos. Tanti.	Total, \$4,500.
Sept.	2	Geo. Linwood. 94835	30	Digby, N.S.	Schr.... Wood Sail	25-20	Halifax E. Chezzetcook.	E. Chezzetcook har. N S	Stranded N. Pettipas.	Total, \$500.
Nov.	10	Glenallah 112205	6	Hamilton	F. & A. Steel Steam	1,453	Sydney Lahave, N.S.	6 m. off Casquet rock, Eng. channel	Damaged by fire D. MacKinnon.	Partial, \$500.
Nov.	14	Gub. 131116	8	Montreal...	140 Steam			W. coast of Anticosti	Foundered...	Total.
Nov.	26	Dlyndon		Lunenburg	Schr.... Wood Sail	99	Guysborough New York.	Liverpool, N S	Stranded	Partial.
Dec.	27	Glenham 113734	12	Whitby, G. B	F. & A. Steel Steam	2,065	S. Shields..... Portland, Me	In Lat. 39° 9' N. Long. 64° 55' W N. Atlantic.	Damaged in gale. A. S. Kirby.	Partial. \$4,200.
Dec.	27	Georgiana	9	Boston.	Schr.... Wood Wood Sail	87	Gloucester Fishing.	Country harbour. Idges, N.S.	Stranded G. B. Anderson.	Partial, \$3,200.
Jan.	19	Hunter	37	Boston.		198	St. John, N B Vineyard Haven.	St. John harbour.	Stranded S. H. Funk.	Total: Ship, \$2,800. Cargo, \$2,271. Partial.
Jan.	26	Hilda R. 126904	5	Halifax	Schr.... Wood	100	Harbour Grace Gib.	Lat. 41° N., Long. 30° W. N. Atlantic.	Loss of sails and part of cargo. W. Zettman.	
April	3	Harry 100119	22	Parrsboro.	Schr.... Wood Sail.	396	Perth Amboy. Halifax.	Off New Haven, Conn	Damaged by seas. W. H. Smith.	Partial, \$1,800.

7 GEORGE V, A. 1917

STATEMENT of wrecks and casualties reported as having occurred to British, Canadian and Foreign vessels in Canadian waters
and to Canadian vessels in other waters, from January 1 to December 31, 1915.—*Continued.*

SEA GOING WRECKS—*Continued*

Date of Casualty.	Name of Ship. Official No.	Age of Ship Years	Registered Port.	How Rigged Iron or wood. Steam or sail.	Regis- ter Ton- nage.	Port sailed from. Port bound to.	Place where Casualty Happened.	Particulars of Casualty. Name of Master.	Lives Lost.	Loss Total or Partial.
April 4	Harald 95137	3	New York	Schr. Wood Aux.	429	Calais, Me. New York.	65 m. S. of Cape Cod	Foundered S. R. Cook		Total: Ship, \$9,000. Cargo, \$5,000.
April 4	Hattie McKay. 103722	1	Parrsboro.	Schr... Wood Sail	19	Joggins, N. S. Granville ferry.	Seal Lodge, N. B., Bay of Fundy.	Stranded Jas. H. Card.		Partial, \$150.
May 28	Harry 100119	22	Parrsboro.	Schr... Wood Sail	396	Halifax Newark, N. J.	60 m. W. of Seal id	Foundered... W. H. Smith.		Total, \$8,000.
June 3	Haddington. 116764	11	Toronto.	Steel Steam	1,010	Ashtabula Caspé.	At Red Island.	Stranded R. J. Wilson		Partial.
June 10	Henry B. Hall. 100278	34	Ogdensburg.	Wood Steam	962	St. Siméon, P. Q. Ogdensburg.	3 m. above Stone Pillars light.	Stranded D. H. Kiah.		None.
Sept. 10	Hiawatha. 121857	9	Lunenburg	Schr... Wood Sail	98-72	Barin, Nfld. Halifax.	Halifax harbour.	Burnt. Hubert Clark.	3	Total: Ship, \$4,000. Cargo, \$5,000. Total.
Sept. 28	H. C. Henry. 127549	16	Vancouver	Schr. Steel Steam	2,553	London... Lemnos, Med.	Lat. 35° 25' N. Long. 22° 46' E., Off Crete, Med. sea.	Sunk by German submarine. H. G. Estey.		
Oct. 23	Hartney, W. 116322	12	Parrsboro.	Schr. Wood Sail	271	Southam Buoy... New York.	Vineyard sound	Collided with <i>Ed- ward.</i>		Partial.
Oct. 25	Harry E. Packer 116815	7	Coburg	Wood Steam	810-12	Chatham, N. B. Liverpool.	Chatham harbour	Capt. Wasson Boiler leaking. Thos. Kyffin.		Partial.
Nov. 6	Harmatris 135169	3	London	Schr. Steel Steam	4,771	Montreal. Havre.	Cape la Roche.	Stranded. F. H. Soares.		Partial.

SESSIONAL PAPER No. 21

Nov. 15	Hattie McKay.... 103722	19	Parrsboro.....	Schr. Wood Sail	74 St. John, N B Portapique, N S	Cobequid bay, N S	Stranded Jas. H. Card.	Partial. Ship, \$400. Cargo, \$250 Partial.
Nov. 27	Hazel R. Ritey... 126102	7	Lanenburg	Schr.... Wood Sail	92 St. Jacques, Nfld Green Bay, Nfld.	St. Pierre, Miq	Stranded E. Young.	
Dec. 19	H. S. M 122037	46	Weymouth.	Schr.	139 Liverpool, N S. Boston.	Near Nahant, Mass.	Stranded P. Pothier.	Partial.
July 30	Ivanhoe 122547	8	Vancouver	Sail Tug.... Wood Steam	123 45 Powell river Health bay.	Gilford sd., B C	Stranded Art. Stohlberg.	Partial.
Sept. 22	Indore 109447	17	Liverpool	Schr.... Steel Steam	4,775 Montreal London.	1 m. below point Citrouille.	Stranded G. Windahl.	None
Oct. 26	Ida E 126222	25	Montreal	Wood Steam.	135-56 St. Joseph Sorel. Montreal.	2 m. below Lavaltrie	Collided with <i>Isa- belle Reid</i> .	Partial, \$4,000.
Jan. 23	John J. Fallon..	8	Boston	Schr. Wood Sail	77 Boston Fishing.	Meagher Black cove.	Ferdinand Pilow. Damaged by seas James O'Brien.	Partial, \$500.
Aug. 12	Jessie Spaulding.. 77632	16	Chicago	Schr Steel Steam	956 Ashtabula Washburn, Wis.	Montreal harbour	Collided with barge <i>Peaport</i> .	None.
Sept. 27	John Millard 75779	34	Charlottetown	Schr Wood Sail	69	Pictou, N.S	Collided with sunk- en wreck.	Total.
Oct. 26	J. H. Plummer.. 114447	12	Newcastle	F. & A Steel Steam	1,582 Fort William Montreal.	Montreal harbour	Collided with <i>Glen- garry</i> .	Partial.
Oct.	Jean Joseph 126932	6	Quebec	Schr Wood Sail	50 Quebec Chicoutimi.	St. Irene	Loss of front mast John A. Levesque.	Partial.
Nov. 19	James U. Thomas 121910	9	St. John	Schr Wood Sail	80	Whitehead harbour	Stranded Capt. Barkhouse.	Partial.
Nov. 24	Jinks 133726	21	Vancouver	Wood Gas	21 42 Vancouver Vancouver.	Queen Charlotte sd.	Stranded Jas. B. Gillespie.	Total, \$9,000.
	Jennie B Hodgsons..	24	Chatham	Schr Wood	79 Brigus, Nfld N. Sydney.	1 mile N.E. of Cran- berry Head.	Foundered John Hopkins.	Total.
Jan. 9	Kilhell 102022	20	Parrsboro	Iron Steam Tug.... Wood Steam	56 Pt. Hastings Halifax.	Bald Rock shoal	Stranded J. T. Ellworthy.	Total, \$10,000.
April 1	Kitsap 126800	20	New Westminster.		17-22 New Westminster	Fraser river, B.C	Burnt C. Coutts.	Total.
Aug. 2	Kenora. 124235	8	Glasgow	Steel Steam	1274 Montreal Sydney.	Off Flat point, C.B	Stranded Capt. Burgess.	Partial.

STATEMENT of wrecks and casualties reported as having occurred to British, Canadian and Foreign vessels in Canadian waters and to Canadian vessels in other waters, from January 1 to December 31, 1915. —Continued.

SEA GOING WRECKS — Continued.

Date of Casualty.	Name of Ship. Official No.	Age of Ship. Years	Registered Port.	How Rigged. Iron or wood. Steam or sail.	Register Tonnage.	Port sailed from. Port bound to.	Place where Casualty Happened	Particulars of Casualty. Name of Master.	Lives Lost.	Loss. Total or Partial.
Aug. 5	Keyvive	2	Middleboro	Steel Steam Schr. Sail	1044	Three Rivers Sydney.	1½ miles below Champlain.	Stranded Geo. Bunting.		Partial.
Sept. 1	Kingfisher 103949	16	Chatham	Steel Steam Schr. Sail	50	..	10 miles E. of Miscou It.	Collided with <i>Henn</i> <i>J. Smith</i>		Partial.
Dec. 12	Kwango	25	Christiania, Nor.	Steel Steam	1709	Maryport Buenos Aires.	Bryon island	Stranded J. F. Galbeckhausen		Total: ship, \$32,500. cargo, \$30,000. Total, \$6,000.
May 16	Laura C 112096	12	Bridgetown	Steel Steam Schr. Wood Sail	249	Demerara Philadelphia.	4 miles N. of cape St. Antoine, Cuba	Stranded L. Smith.		Total.
April 3	Langrad 130878	7	New Westminster	Tug. Wood Sail	6 55	Vancouver New Westminster	Fraser river	Burnt D. J. Smith.		Total.
June 15	Lotus 107805	16	St. John	Gas Schr. Wood Sail	98	Boston Windsor, N.S.	Matinicus Is Maine.	Stranded Leroy Merriam.		Total, \$1,000.
July 1	L. C. Tower 133893	1	Parrishoro	Steel Wood Schr. Sail	518	Port Greenvile Newport, Eng.	25 miles S. S. W. from Pastnet.	Sunk by German submarine. A. H. Wry.		Total, \$32,000.
July 5	Leo 100075	24	St. John	Steel Wood Schr. Sail	93	Economy, N.S. Parrishoro.	Economy pt., N.S.	Stranded John Reector.		Total, \$200.
July 10	Louise 80614	34	Barrington Pass- age.	Steel Wood Schr. Sail	85	Pt. Hastings Barrington.	near Blanche life- saving station, N. S.	Stranded R. H. Worthen.		Total: ship, \$3,000. cargo, \$400. None. Scow sunk.
Aug. 25	Leonard	1	Quebec	Ferry. Steel Steam		Quebec Levis.	S. Landing, Levis.	Collided with scow Jas. Choquette.		Total.
Sept. -	Lavonia			Steam		New York.	20 miles from Port Elgin.	Stranded		Total.

SESSIONAL PAPER No. 21

Sept. 10	Sept. 15	Sept. 23	Sept. 25	Oct. 13	Oct. 30	Nov. 25	Dec. 12	Dec. 14	Jan. 13	Jan. 30	Feb. 23	May 17	May 26	July 23	July 30	Oct. 8	Oct. 11
Lota . . .	Lillian Linwood.. 96763	Lydia May 131201	Lizzie Lindsay.. 75448	Lady of Gaspe. 78554	Leona 122951	Lawson 125790	Lavengro.	Levuka . 100519	Mildred Robinson	Morwenna . 118108	Mongolian 98605	Marion Helma 134407	Morwenna 118108	Medora . 131438	Matapedia . 130736	Mariposa Mount Eagle 110554	
24	45		32	38	10	6		22		10	24	1 m.	11	3	4	16	
Christiania .	Arichat.....	Liverpool, N.S...	Gaspe	Quebec.	Goole, G.B.	Parrsboro		Parrsboro	Boston	Montreal	Glasgow	Lunenburg	Montreal	Liverpool	Lunenburg	American . Liverpool	
Bkte....	Schr....	Schr....	Schr....	Schr....	Schr....	Schr....	Schr....	Schr....	Schr....	Schr....	Schr....	Schr....	Schr....	Schr....	Schr....	F. & A Steel	
Steel Motors.	Wood Sail	Wood Sail	Wood Sail	Wood Sail	Iron	Steam F. & A..	Iron	Wood Sail	Wood Sail	Steel	Steel	Wood Sail	Steel	Steel	Steel	Wood Sail	
1, 162-31 Philadelphia. Marseilles.	67 Pt. Hastings Tignish, P.E.I.	39 Lockeport	91 Quebec Grand Meekins.	705 Montreal Paspebiac.	308 Britannia beach Tacoma, Wash.	274 Old Calabar, A New York.		76 Windsor, N.S. Parrsboro.	86 Boston . Shelburne.	856 St. John's, Nfld. . St. John's.	3, 087 Glasgow Glasgow.	91-15 Mahone Bay, N.S.. Magdalen Is.	856 Cardiff . Sydney.	3, 240 London Avonmouth.	98-26 Lahave, N.S Fishing.	3, 955 Vancouver Japan.	
S. of Sable island.	N. cape of P.E.I...	Lockeport harbour.	Grand Meekins, P.Q	Quebec harbour	4 miles N.W. of Act- ive pass, B.C.	Lat. 15°30' N.. Long. 39°20' W. N. Atlantic. Burn Pt. Togo, Nfld		Minas basin. . . .	Shelburne harbour.	Halifax harbour. .	Lat. 47°34' N Long. 36°16' W. N. Atlantic. Pt. Hawkesbury, harbour.	Lat. 50°27' N Long. 8°44' W. Welsh Coast. Cap a la Roche	5 miles S. S.E. of Cape Ballard.	S. of Napier pt., B.C Vancouver harbour			
Stranded	Damaged in storm W. Trenholme.	Burnt. A. Heffman.	Foundered.... Moise Chenel.	Stranded J. S. Deslauriers.	Foundered ... A. Cochrane.	Loss of sails . . . R. Knowlton.	Stranded Stranded	Stranded Joe Ogilvy.	Stranded N. N. Guilford.	Collided with <i>Ch- bucto</i> L. Holmes. Sprung a leak J. W. Hatterly.	Stranded C. Burgoyne.	Sunk by submarine E. Hartney.	Stranded D. Gannick.	Collided with <i>Drot.</i> C. B. Mason.	Stranded Damaged by fire A. Hailey.		
Partial, ship. Total, cargo, \$36,000. Partial, \$300.	Total.	Total.	Partial.	Total.	7 Total.	Partial.	Total.	Total, \$200.	Partial.	Partial, \$10,000.	Partial, \$25,000.	Partial: ship, \$1,150. cargo, \$500. Total.	Slight.	Total.	Partial, \$200,000. Partial.		

STATEMENT of wrecks and casualties reported as having occurred to British, Canadian and Foreign vessels in Canadian waters and to Canadian vessels in other waters, from January 1 to December 31, 1915.—Continued.

SEA GOING WRECKS—Continued.

Date of Casualty.	Name of Ship. Official No.	Age of Ship Years	Registered Port.	How Rigged. Iron or wood. Steam or sail.	Register or Tonnage	Port sailed from. Port bound to.	Place where Casualty Happened	Particulars of Casualty. Name of Master.	Lives Lost	Loss. Total or Partial.
Nov. —	Millie Louise..... 121865	9	Lunenburg	Schr Wood Sail	5	Pugwash Boston.	Atlantic ocean	Damaged by heavy weather. Thos. Boudreau.		Partial. 1,000
Nov. 6	Mudlark	27		Dredge... Wood Steam			Victoria harbour.	List caused water to enter barge. T. H. Browne.		Slight.
Dec. —	Mary F. Fleming 133803	2	Lunenburg	Schr..... Wood Sail	94	Lunenburg.	Ingonish	Stranded.....		Partial.
Dec. 15...	Mayflower..... 116553	9	Maitland.....	Schr Wood Sail	132	New York St. John, N.B.	Spewick bay, U.S....	Damaged in gale... J. V. Marsters.		Partial, \$118.
Dec. 16	Maugen 126557	6	New Westminster	Tug.... Wood Steam	31	Ladysmith..... Vancouver.	First narrows, B.C	Collided with launch Tollson Edwards.	2	Partial.
Feb. 18	Nina German 122585	5	Yarmouth.....	Schr Wood Sail	148	Belliveau Cove Barbados.	Lat. 38° N..... Long. 64° W.	Damaged in gale. Thos. German.		Partial, Launch sunk. Partial, \$625.
May 10	Nina German 122585	5	Yarmouth	Schr Wood Sail	148	Barbados	Middle Ground of Lower Hopewell cape.	Foundered..... Thos. German.		Total: Ship, \$6,500. Cargo, \$10,015. Total.
Dec. 18	Northmount 124260	7	Montreal	Schr Steel Steam	1,172	Newport News..... Trinidad.	Lat. 34°40' N Long. 74°45' W.	Foundered..... Jas. Sutherland.		Total, \$31,000.
Oct. 9	Otter 107832	15	Victoria	Schr Wood Steam	232	Victoria Boat Harbour.	Lat. 48°35' N..... Long. 123°17½' W. Hero strait, B.C.	Stranded G. D. Robertson.		Total: Ship, \$9,000. Cargo, \$3,500.
Dec. 4	Original..... 130826	3	Lunenburg	Schr..... Wood Sail	97-68	Lunenburg..... Fishing.	Ingonish	Stranded..... Roger Conrad.		

Dec.	14	Orleans.		Schr.... Wood Sail	Louisburg Montague, P.E.I.	Big Dover, N.S.	Stranded (Capt. Blake.	Total.
21	23	Prince George... 110003	17	Yarmouth	932 Boston Boston.		Damaged by seas. A. W. McKinnon.	Partial.
12	1	Priscilla Smith	14	Gloucester, M., U.S.A.	77 Gloucester Shelburne.	Entrance to Jordan bay.	Stranded D. P. Forest.	Total.
	11	Prince George... 110003	17	Yarmouth	932 Boston	Boston harbour	Stranded A. W. McKinnon.	None.
	19	Polarstigeran		Copenhagen	2,199 Norfolk Aalborg, Den.	Lat. 47° N Long. 57° W. N. Atlantic.	Rudder damaged Chas. Neilson.	Partial, \$2,400.
	1	Pomeranian 85193	33	Glasgow	2,694 Glasgow Halifax.	Lat. 47° & 42° N Long. 29° 01' W. N. Atlantic.	Lost propeller blade Jas. McDonald.	Partial, \$35,000.
	8	Port Colborne 129734	6	Newcastle	1,305 Dalhousie Portland, Me	Lat. 47° 31' N Long. 68° 30' W. Gulf St. Lawrence	Damaged by ice W. Steeves.	Partial, \$5,000
	8	Point Hope	6		Victoria Victoria	Victoria harbour	Collided with Dredge Victoria. J. Noel	Partial.
	24	Pembina		Chatham	17 Shippigan Fishing.	Tracadie	Stranded John S. Acke.	Partial, \$500
	3	Prefontaine 103557	17	Montreal	533 Montreal Montreal.	Mouth of Jacques Cartier river.	Stranded Stephen Paul.	Partial.
	17	Paragon		Gloucester, Mass	80 Gloucester Lockeport	Near Lockeport..	Stranded Wm. J. Harman.	Partial.
	19	Prydwen . . . 131097	2	Shelburne	287 Garston Warrie, W. Africa.	10 miles from New harbour, Holy Head.	Collided with Grecian Empire E. Rudolph.	Partial.
	23	Pollandia		Liverpool	... Montreal. Glasgow.... Montreal.	Off White island	Collided with Kan- san. Wm. P. Haines.	Partial.
	15	Pretorian . 113969	14	Glasgow	4,345 Glasgow Montreal.		Collided with Kan- san. Wm. P. Haines.	Partial, \$23,000.
	22	Palatia 111642	14	Lunenburg	93.25 Halifax Halifax	Fox River, P.Q	Stranded... Leonard William.	Total: Ship, \$2,800. Cargo, \$300.
	27	Princess Charlotte 126236	6	Victoria	1,991 Victoria Vancouver.	Collinson point, B.C.	Stranded I. O. Griffin.	Partial.
	26	Pathan 118219	10	Rochester	3,176 New York Hull, G.B	Lat. 41° N Long. 66° W. N. Atlantic.	Damaged in gale. E. A. Chaplin.	Partial, \$30,000.

STATEMENT of wrecks and casualties reported as having occurred to British, Canadian and Foreign vessels in Canadian waters and to Canadian vessels in other waters, from January 1 to December 31, 1915. *Continued.*

SEA GOING WRECKS—Concluded.

Date of Casualty.	Name of Ship. Official No.	Age of Ship. Years	Registered Port.	How Rigged. Iron or wood. Steam or sail.	Register-Tonnage.	Port sailed from. Port bound to.	Place where Casualty Happened	Particulars of Casualty. Name of Master.	Lives Lost	Loss. Total or Partial.
June 14	Quebec 122405	9	Montreal	Iron Steam	1,985-81	Montreal Quebec	Quebec harbour	Collided with Athenia. L. R. Demers.	Partial.	
July 6	Quebec 122405	9	Montreal	Iron Steam	19585-81	Montreal Quebec	5 miles above Three Rivers	Stranded L. R. Demers.	None	
Sept. 27	Quigley 133929	6	Chatham	Steam Schr. Wood Gas	116	Chatham	Esquimaux point	Stranded C. McLean.	Total, \$500.	
April 4	Revelstoke 111777	13	Victoria	Steam	179		Canapix, B.C.	Burnt	Total.	
May 8	Riviera	14	Lunenburg	Schr. Wood Sail	96	Boston. Pugwash.	Off bay of Fundy	Mainboom broken Thos. Gannon.	Partial, \$50	
June 24	Romney 110532	16	Liverpool	Schr. Steel	2,815-9	Liverpool. Montreal.	Green island	Stranded Thos. Moss.	Partial, \$40,000	
July 9	Rosemount 103565	19	Montreal	Steam Schr. Steel	989-27	Montreal Sydney.	Opposite Lotbiniere	Stranded A. B. Langlois.	Partial, \$2,000.	
July 10	Roma 107125	16	Lunenburg	Steam Schr. Wood Sail	99	Bathurst. New York.		Sails and part of deck load lost.	Partial.	
Aug. 16	Romera 129424	6	Glasgow	Schr. Steel	3,188	Boulonge Montreal.	3 miles NE. of Cape Salmon.	Stranded R. Fair.	Partial.	
Nov. 4	Rio Lagos 112736	15	London	Steam Schr. Steel	2,315	Middleboro Queensdown.	Lat. 41° 40' N. Long. 59° 15' W. N. Atlantic.	Damaged by fire U. W. Bell.	Partial.	
Dec 10	Rescue..... 77787	34	Halifax	Steam Schr. Sail	20		NW. Arm...	Foundered	Partial.	

SESSIONAL PAPER No. 21

Dec.	29	Rosland... 122189	5	Arichat	Schr... Sail	95	Oporto... Fortune, Nfld.	SW. of Great Banks, Newfoundland.	Abandoned (Ceil R. Hake.	Total: Ship, \$7,000. Cargo, \$315. Partial, \$9,000
21—12 ³¹	Mar. 12	Sea Lion... 117116	10	Vancouver	Schr... Wood Steam	148-15	Vancouver Vancouver.	Entrance to Active pass	Stranded. E. Fulton.	Partial.
	July 25	Santa Olaf... 116321	12	Parrsboro	Schr... Wood Sail	277	Parrsboro Llanelly.	Channel leading to Llanelly	Loss of anchor A. H. Wry.	Partial.
	Aug. 17	Silver Wings... 118498	11	London	Schr... Steel	1,826	S. Shields Archangel.	Sable Island	Stranded. Ed. O'Toole.	Total.
	Aug. 19	Santa Olaf... 116321	12	Parrsboro.	Schr... Wood Sail	277	Llanelly, Wales Parrsboro.	53 miles from Gally head, Ireland	Sunk by German submarine A. H. Wry.	Total, \$10,000.
	Sept. 5	Senma... 85075	34	Vancouver	Iron Steam	96	Vancouver... Seehelt, B.C.	One mile W. of point Atkinson, gulf of Georgia.	Collided with launch H. E. Lawry.	Partial.
	Sept. 12	Statesman... 105319	20	Liverpool	Schr... Steel Steam	4,002	Montreal Havre.	Montreal harbour	Stranded. E. Maycock.	None.
	Sept. 16	Scotsman... 116114	12	Halifax	Schr... Iron	12	Halifax... Bridgewater.	Off Sandwich point, Halifax harbour.	Collided with Car- naryon. Gordon Innis.	Partial, \$1,500.
	Sept. 26	Susteen...	17	Denmark	Bge.... Wood Sail	306-56	Kureyre, Iceland. Rimouski.	Barnaby island	Stranded. R. H. Hendson.	Partial.
	Oct. 22	Silver Leaf... 112329	12	Parrsboro	Schr... Wood Sail	283	Turks island Bucksport, Me.	East Chop, near Vineyard haven.	Stranded	None.
	Nov. 6	Silver Leaf... 112329	12	Parrsboro	Sail...	283	Pt. Greville... Advocate Har	Spencer's Island, N.S.	Stranded (has. Salter	Partial, \$500.
	Nov. 11	Saint Alice... 130305	25	Vancouver	Tug... Wood Steam	38	Vancouver... Boat Harbour.	Bowan island, Hare sd., B.C.	Foundered... L. Buckwall	Total.
	Nov. 13	St. Cecilia					Montreal... London.	Montreal harbour	Stranded	Partial.
	Nov. 18	Squid... 116459	12	Vancouver	Wood Steam	40-78	Nanaimo South View.	South View, B.C.	Stranded. W. S. Donaldson.	Partial, \$1,000.
	Nov. 24	Sernialmo... 126086	8	Vancouver	Sloop... Wood Gas	10-68	Vancouver...	1-mile above River cove, Johnston strait.	Stranded	Total: Ship, \$7,000. Cargo, \$800. Total.
	Dec. 13	Senlac... 112239	11	St. John	Steam	615	Sydney	Sydney harbour..	Burnt	
	Dec. 19	Sea Bird... 103207	19	Halifax	Schr... Wood Steam	28		Lockeport harbour.	Stranded	

STATEMENT of wrecks and casualties reported as having occurred to British, Canadian and Foreign vessels in Canadian waters and to Canadian vessels in other waters, from January 1 to December 31, 1915.—Continued.

INLAND WATERS WRECKS.

Dates of Casualty.	Name of Ship. Official No.	Age of Ship. Years.	Registered Port.	How Rigged. Iron or wood. Steam or sail.	Register Tonnage.	Port sailed from. Port bound to.	Place where Casualty Happened.	Particulars of Casualty. Name of Master.	Lives Lost.	Loss. Total or Partial.
April 9	Therese 94635	27	Yarmouth	Schr. Wood Sail	148	Desecusse Crapaud.	Crapaud, P.E.I	Stranded L. Peotus.		
May 28	Tanana 201297	11	American	Wood Steam	372	Hooxalingua White Horse.	14 miles above Hooxalingua.	Stranded Miles Lemley.		Partial, \$5,000
Nov. 7.	Turret Crown	26	Newcastle		1,827	Levis....	Gilmours beach.	Stranded		Partial.
June 28	Tadousac 112267	30	Montreal.	Schr Iron	1052	St. Irenee St. Irenee	Quebec	Stranded Joe. Dugal		Partial.
July 29	Thor	8	Tonsberg, Nor		2889	San Francisco	Carrot rock, Ore.	Stranded O. Hansen		Partial, \$23,000.
Sept. 16	Tarrantine 211670	2	Rockland, Me	Steel Schr Wood.	230	Halifax Bridge-water	Halifax harbour.	Collided with Carnarvon		Partial.
Nov. 27	Turret Crown.		Newcastle	Steel	1827	N. Sydney.	Levis.	A. B. Outhouse. Stranded.... F. S. Wilson		Partial, \$1,500.
April 27	Uncle Sam 88597	30	Halifax	Steam Schr Wood Sail	77	Halifax. Summerside	Tryon cove, P.E.I	Stranded Wm. Harpell.		Total, \$2,000.
June 22	Ungava 122066	9	Montreal	Barge. Steel	1,226	Sydney. Quebec	Sydney harbour.	Damaged by fire		Partial.
June 15	Vienna 111198	16	Glasgow.	Steam Schr Steel	2,653	Montreal Havre.	Bryon island	Stranded R. J. Cormancee.		Partial.
Sept. 17	Vera B. Roberts. 103736	17	Parrsboro	Steam Schr Wood Sail	124	Sydney Stonchaven.	Off Victoria, P.E.I	Burnt M. Benjamin.		Total, \$3,000.
Jan 8	W. Cortada 131166	2	Lunenburg	Schr Wood Sail	108	Lunenburg Ponce, Penurto Rico	N. Atlantic	Missing Ed. Buchanan.	6	Total: Ship, \$12,000. Cargo, \$11,000.

SESSIONAL PAPER No. 21

Jan.	15	Wilfred M 126583	6	Bridgetown	Schr Wood Sail	198-93	St. John's Bahia.	Off Pernambuco, Brazil	Sunk by German cruiser, C. W. Parks.	Total: Ship, \$8,000. Cargo, \$45,000. Partial.
May	22	W. S. Wynst 111649	14	Lunenburg.	Schr.... Wood Sail	100	Fernseuse, Nfld Halifax.	About 26 miles S. of St. Pierre.	Damaged in gale. P. H. Wilcox.	
May	26	Wm. Matheson.... 80515	40	Costine, Me	Schr.... Wood Sail	72	Bucksport, Me Magdalen Is	Sandy Hook	Stranded J. H. Deverean.	
July	10	Wapita	26	Yarmouth.	Schr.... Wood Sail	99-99	Port Hawkesbury Miramichi.	Egmont bay, P.E.I.	Stranded. E. S. Griffin	Partial.
Oct.	20	W. N. Zwicker 111724	14	Bridgetown	Schr.... Wood Sail	398	New York Halifax.	Cow's ledge, Long Island sound	Stranded. J. L. Publicover.	Partial, \$500.
Dec	21	W. W. Watters 100099	23	St. John	Schr.... wood Sail	120	Boston St. Martins	N. Atlantic	Rudder part strain- ed. B. S. Goole.	Partial.
Dec	28	Winona 122851	10	Hamilton	Schr.... Steel	1,327	Montreal Sunderland	Gull Lt. Vessel.	Collided with Tons- berg. Chas. O. Allen.	Partial, \$1,250.
May	6	Yarmouth Packet. 75745	35	Yarmouth	Schr.... Wood Sail	77	Louisburg Canso.	Entrance to Cheda- bucto bay.	Stranded.. H. C. Townsend	Total.
Feb.	22	Zeta. 112058		Windsor	Schr Wood Sail	325	Mobile. New York.	Lat. 241°3' N Long. 35°58' W. Gulf of Mexico	Loss of sails W. M. Rembray	Partial, \$600.

INLAND WATERS WRECKS.

May	1	Algonquin 95051	27	Port Arthur, Ont.	Schr Steel Steam	1,172-02	Port Colborne Montreal.	Head of Morrisburg canal.	Stranded F. R. Johnson.	Partial.
Aug.	17	A. McVittie.	25	Ogdensburg, N.Y.	Barge... Wood Steam	1,552	Oswego Montreal.	Opposite Dorval, lake St. Louis.	In collision with "Dolphin". J. Owens.	Partial.
Aug.	3	Alexandria 85768	12	Picton, Ont....	Wood Steam	508	Montreal Toronto.	Scarboro bluff, lake Ontario.	Stranded .. W. Bloomfield.	Total: Ship, \$62,000. Cargo, \$20,000.
Aug.	4	Alexander McDou- gall. 85768	17	Duluth, Minn..	Steel Steam	3,686	Toledo, Ohio Duluth, Minn.	Lake Huron.	Stranded Hugh McLeod.	Partial.
Aug.	14	Athabasca 85764	32	Montreal	Steel Steam	2,348	Fort William. Port McNicoll.	Lat. 40° 50' N Long. 80° W. Georgian bay.	Stranded John B. Currie.	Ship, \$60,000. Cargo, \$1,000 No damage.
Nov.	11	Aileen 116834	11	Kingston, Ont..	Steel Steam	23-60	Ville Marie, P.Q Haileybury, Ont.	Lake Timiskamin- gue.	Missing H. Kirby.	Total: Ship, \$4,500 Cargo, \$200 Partial.
Oct.	18	Byron Whittaker 134145	25	Montreal	Wood Steam	957	Port Colborne Montreal.	1 mile East of Car- dinal, St. Lawrence river.	Stranded E. Tremblay.	
Oct.	24	Britannia			Wood Steam			Lower end of Belle- Isle, American side.	Stranded	Slight.

STATEMENT of wrecks and casualties reported as having occurred to British, Canadian and Foreign vessels in Canadian waters and to Canadian vessels in other waters, from January 1 to December 31, 1915.—Continued.

INLAND WATERS WRECKS (continued).

Date of Casualty.	Name of Ship. Official No.	Age of Ship. Years.	Registered Port.	How Rigged. Iron or wood. Steam or sail.	Regis- ter Ton- nage.	Port sailed from. Port bound to.	Place where Casualty Happened.	Particulars of Casualty. Name of Master.	Lives Lost.	Loss. Total or Partial.
April 27	Collingwood 117089	8	Collingwood, Ont.	Steam	3,480	Port Colborne.	Near Corsica shoal.	Stranded.....		Partial.
May 5	Corey.....			Steam			Vidal shoal.	Stranded.....		Partial.
Aug. 3	City of Ottawa. 122018	45	Ottawa	Steam Sloop..... Iron	538.41	Hamilton, Ont..... Montreal.	1 mile east of Stanley island.	Stranded..... J. L. Baxter.		Slight.
Aug. 3	Chippewa..... 100753	23	Toronto, Ont.....	Steam Paddle.. Iron	764	Toronto, Ont..... Lewiston, Me.	9 miles off Giberallia point, lake Ontario	Damaged in storm.. W. Malcolm.		Partial, \$20.
.. .	Corunda 99224	24	Montreal	Steam Schr.. Steel	792	Sydney, N.S..... Fort William, Ont.	West of Fort William	Stranded..... J. A. Macdonald.		Slight.
Sept. 25	City of Shebogan. 137894		Toronto, Ont.....	Tug.....		Kingston.....	Amherst island, Lake Ontario.	Foundered.....		Total.
Nov. 4	Canobie..... 133826	28	Montreal.....	Steam	1,057.39	Montreal..... Ashtabula.	Lake St. Louis.....	Stranded..... Leon Pregent.		No damage.
Nov. 19	Caba 71153	35	Montreal.....	Wood Steam Barge.. Wood	385.91	Sorel..... Lachine canal.	50 ft. East of St. Gabriel lock, Lachine canal.	Collided with wall of canal.		Partial, \$300.
Dec. 2	City of Bangor..		(American).....	Steam		Duluth.	1 mile west of Menagerie light, Isle Royale	Stranded		Partial.
Dec. 13	C. M. Bowman. 107191	15	Sauguen	Tug.. Wood Steam	59.92	Owen Sound..... Midland	Vale's point, Georgian bay.	Burned		\$7,000.

SESSIONAL PAPER No. 21

Aug. 17	Dolphin 80680	34	Ottawa	Tug.. Wood Steam	36-50	Montreal Ottawa.	Opposite Dorval, Lake St. Louis.	Collided with W. A. McVite.	Total.
May 19	Fred. Mercur	33	Ogdensburg	Barge.. Wood Steam	906	Charlotte, N.Y. Montreal.	Head of Galops rapids.	Stranded S. Lavigne. S. Lebeau.	Slight.
June 13	Evelyn. 100301	23	Windsor	Tug... Wood Steam	46-38	French river. French river.	Near Byng inlet, Georgian bay.	Sprung a leak and sank. Robt. McIntosh.	Total.
June 17	Elzear 112262	13	Montreal	Sloop...	5-8		Lachine canal.	Foundered	Total.
April 29	Glenfellan..			Steam.			Vidal shoals	Stranded	Partial.
April 30	Glenmount. 122408	8	Montreal	F. & A. Steel Steam	1,246	Port William Montreal.	Off Shoal Round Pt., St. Lawrence river.	Stranded H. H. Peters.	Partial.
Aug. 3	Garden City 100035	23	Toronto.	Paddle. Iron Steam	401	Toronto. Port Dalhousie.	1½ miles from East- ern Gap, lake Ontario.	Damaged in storm. S. W. Blanchard.	Partial, \$15.
June 5	Horace Taber.					Gananoque Oswego, N.Y. Valleyfield. Montreal.	Snake island	Stranded	Partial.
June 14	Hetron 107813	16	Montreal.	Wood Steam	226-55		Above St. Gabriel Lock, Lachine canal.	Collided with "Laurentia". J. B. Couillard.	None.
July 9	Henry B. Hall	34	Ogdensburg	Wood Steam	962	Ogdensburg Ogdensburg.	Lachine cut, Lake St. Louis.	Stranded. D. Kiah.	Partial, \$500.
Dec. 3	H. S. Mack					Fort William Midland.	West Neebish chan- nel.	Stranded	Partial.
Aug. 19	India 107735	16	Montreal	Steam F. & A. Wood Steam	572-82	Port Colborne Montreal.	Near Cascade point, lake St. Louis.	Stranded Chas. Beaupre.	None.
April 20	J. Frater Taylor	14	Sault Ste. Marie	Steel Steam	2,030	Port William. Port Colborne.	Passage island, lake Ontario.	Stranded R. H. Boyle.	Partial.
May 1	Joska 126128	6	Kingston.	Steel Steam	108	Fairhaven, U.S.A.. Trenton.	Northport shoal, Bay of Quinte.	Stranded. E. J. Smith.	Partial.
June 15	John Lambert	12	Duluth	Steel Steam	929	Duluth Montreal.	Lake St. Francis	Stranded. E. Quackenbush.	
Sept. 22	John Crearer	12	Duluth.	Steel Steam	959	Chicago Duluth.	Ariel rock, Georgian bay.	Stranded C. W. Bennett.	Slight.
Oct. —	G. W. Bennett 131055	39	Port Arthur.	Wood Steam	73	Port Arthur. Edwards inlet.	1½ miles from Ed- wards inlet, lake Superior.	Stranded A. W. Tremblay.	Partial.
April 28	Keywest 125458	6	Newcastle	Shr... Steel Steam	1,298-44	Port Colborne Montreal.	Off Port Weller, lake Ontario.	Stranded M. Olson.	Partial, \$2,000.

STATEMENT OF wrecks and casualties reported as having occurred to British, Canadian and Foreign vessels in Canadian waters and to Canadian vessels in other waters, from January 1 to December 31, 1915.—*Continued.*

INLAND WATERS WRECKS—*Continued.*

Date of Casualty.	Name of Ship. Official No.	Age of Ship. Years.	Registered Port.	How Rigged. Iron or wood. Steam or sail.	Register for Tonnage.	Port sailed from. Port bound to.	Place where Casualty Happened.	Particulars of Casualty. Name of Master.	Lives Lost.	Loss. Total or Partial.
Oct. 20	Keyport 125459	6	Newcastle	Schr. Steel Steam	1,298	Montreal. Ashtabula.	Head of Morrisburg canal.	Collided with canal wall. J. Mullins.		Partial, \$3,000.
June 14	Lorencia 126485	6	Montreal	Wood Steam	204.88	Valleyfield. Montreal.	Lachine canal near St. Henri.	Collided with "Hebron". H. Cicotte.		Partial, \$20.
Aug. 16	Lehigh	35	Cleveland, O.	Schr. Iron Steam	1,035	Sandusky Montreal.	2 miles from Lachine canal entrance.	Stranded C. M. Stevenson		Partial: Ship, \$8,000 Cargo, \$2,000. Partial, \$15,000.
Oct. 18	L. Edw. Hines		Chicago		982		12 miles south of Sault Ste. Marie.	Collided with "Centurion".		
April 29	Mapleton 123061		Sunderland	Steam	1,140		Dalhousie harbour.	Stranded		Partial.
July 19	Martian 131057	14	Port Arthur.	Steel Steam	2,010.16	Lorraine, O. Key harbour.	Approaches to Key Harbour.	Stranded L. F. Davis.		Partial.
	Minnitakee, 117119	10	Kenora	Wood Steam	12.10		Soo Lookout	Burned		Total.
Dec. 13	Maude L., 126265	8	Toronto.	Tug. Wood Steam	32.97	Owen Sound Midland.	Veales Point, Georgian bay.	Burned		Total, \$7,000.
Dec. 15	Majestic 100950	20	Collingwood	Sloop Wood Steam	1,073	Pt. Edward.	At point Edward.	Burned J. G. Montgomery.		Total.
July 21 Nov. 7	Morrison McNaughton, 88321	29	Montreal.	Tug. Wood Steam	36	Port Dalhousie Kingston.	Near Key Harbour Three-quarter mile east of Murray canal, bay of Quinte.	Stranded Collided with a barge. S. P. Hearn.		Partial. Slight.

SESSIONAL PAPER No. 21

July	31	Noronic. 134014	2	Port Arthur.	Steel Steam	3,955	Sarnia. Detroit.	Detroit river.	Stranded	Partial.
Nov.	7	Northern Queen.					Lake Superior. Cleveland.	Detroit river.	Stranded.	None.
Oct.	24	Princetown 126889	5	Vancouver	Steam	8		Head of St. Clair river.	Stranded	None.
May	3	Rosemount. 103565	19	Montreal.	Schr. Steel Steam	989-27	Montreal. Port Colborne.	Near Montreal	Collided with gates in Lachine canal. R. Graham.	None
June	12	Rapids Prince. 130418	5	Montreal.	Iron Steam	955-11	Montreal Prescott	Soulanges canal	Collided with lock. S. Balton.	Partial, \$500.
Aug.	24	Rob Roy						Off Longue pointe.	Sprung a leak	Partial.
Oct.	7	Rosemount 103565	19	Montreal.	Schr. Steel Steam	989-27	Fort William. Montreal.	Knapp's point	Stranded R. Graham.	Partial.
Oct.	14	Robbins						4 miles from White- fish point.	Stranded	None.
Nov.	4	Simla 112144	12	Montreal.	Steam F. & A. Wood Steam	730-94	Montreal. Port Colborne.	Isle Perreault Lake St. Louis.	Stranded C. E. Coons.	Partial.
Dec.	15	Saronic 80776	33	Sarnia	Sloop Wood Steam	1,296-42		Sarnia	Damaged by fire J. D. Montgomery.	Partial, \$15,000.
July	28	Thyra 116755	28	Toronto.	Wood Steam	23	Toronto. Toronto.	Off Northport, bay of Quinte.	Stranded J. Brown.	Slight.
May	13	Valcartier. 116573	15	Fort William.	Steel Steam	2,247	Fort William. Port Colborne.	Half mile above Corsica shoal light- ship, lake Huron.	Collided with "A. W. Osborne". George McKay.	Partial; Ship, \$35,000. Cargo, \$125,000.
April	24	Winona	9	Hamilton	Schr. Steel Steam	1,326-51	Port Arthur. Montreal.	Lone Brothers island St. Lawrence river	Stranded H. W. LaRush.	Partial.
July	12	Wahcondah 102577	12	Hamilton	Schr. Steel Steam	996	Fort William. Montreal.	On lake Huron	Collided with "Chortaw". C. Dineen.	Partial, \$6,000.
Nov.	8	Water Lily. 116036	11	Kingston.	Steam	26		Cornwall.	Stranded	Slight.

APPENDIX No. 9.

ANNUAL REPORT OF THE MASTERS, SEAMEN AND PILOTAGE
BRANCH.

To the Deputy Minister of Marine and Fisheries,
Ottawa.

SIR,—I have the honour to submit the 1915-16 annual report of this branch.

GOVERNMENT NAVIGATION SCHOOLS.

During the twelve months ended March 31, 1916, navigation schools were in operation for longer or shorter periods, at St. John, N.B., Halifax, Yarmouth and North Sydney, N.S., Quebec, P.Q., Kingston and Collingwood, Ont., and at Vancouver, B.C.

At St. John, Capt. Rufus C. Cole, instructor, the school was in operation 312 days; average attendance three, maximum attendance eight.

At Halifax, Capt. John Simmons, instructor, the school was open every day except Sundays and holidays; average attendance thirteen, maximum attendance thirty-one.

At Yarmouth, Capt. John E. Murphy, instructor, twenty-eight sessions were held; average attendance four, maximum attendance nine.

At North Sydney, Capt. Jas. Sutherland, instructor, thirty-two sessions were held; average attendance five, maximum attendance nine.

At Quebec, Capt. Napoleon Lachance, instructor, the school was in operation eighty-one days; average attendance fourteen; maximum attendance twenty-two.

At Kingston, Capt. Steeves, instructor, the school was in operation six weeks and sixteen pupils were in attendance.

At Collingwood, Capt. Geo. C. Coles, instructor, thirty-two sessions were held; average attendance ten, maximum attendance nineteen.

At Vancouver, Capt. Chas. Eddie, instructor, twenty-four sessions were held; average attendance eight, maximum attendance fourteen.

The total expenditure on account of navigation schools during the above period was \$4,067.97.

MASTERS AND MATES.

EASTERN DIVISION.

At Halifax, N.S., Capt. F. N. Malcolm, examiner, eighty-two candidates were examined: nine for masters, six for mate and ten for second mate, sea-going; twenty-six for master, and twenty-nine for mate, coasting; and two for master, minor waters. Seven persons underwent the sight tests.

At Yarmouth, N.S., Capt. J. E. Murphy, examiner, twenty-six candidates were examined: three for master, six for mate and six for second mate, sea-going; and six for master and five for mate, coasting. One candidate failed for second mate, sea-going.

SESSIONAL PAPER No. 21

At North Sydney, N.S., Capt. Jas. Sutherland, examiner, six candidates were examined: one for master and three for mate, coasting; and two for master, minor waters. Two candidates failed: one for mate, coasting, and one for master, minor waters. Two persons underwent the sight tests, one failed.

At St. John, N.B., Capt. W. R. Bennett, examiner, twenty-one candidates were examined: one for master, two for mate and one for second mate, sea-going; six for master and four for mate, coasting; and four for master and three for mate, minor waters. One candidate failed for mate, coasting. Three persons underwent the sight tests, one failed.

At Charlottetown, P.E.I., Capt. Alex. Cameron, examiner, five candidates were examined: four for master and one for mate, coasting.

At Quebec, P.Q., Capt. P. L. Lachance, examiner, fifty-seven candidates were examined: one for second mate, sea-going; four for master and twelve for mate, coasting; one for master, inland waters; twenty-eight for master and five for mate, minor waters; and six for master's temporary certificates. Eleven candidates failed: one for second mate, sea-going; one for master and four for mate, coasting; and five for master, minor waters. Four persons underwent the sight tests, all failed.

WESTERN DIVISION.

At Vancouver, B.C., Capt. Chas. Eddie, examiner, thirty-eight candidates were examined: one for master and two for mate, sea-going; sixteen for master and fourteen for mate, coasting; one for master and two for mate, minor waters; and two for master's temporary certificates. Six candidates failed: two for master and four for mate, coasting; one person underwent the sight tests.

At Victoria, B.C., Capt. J. D. Macpherson, examiner, thirty-eight candidates were examined: four for master, four for mate and five for second mate, sea-going; fourteen for master and eight for mate, coasting; one for master, minor waters; and two for master's temporary certificates. Two candidates failed: one for mate, sea-going, and one for mate, coasting.

At Prince Rupert, B.C., Capt. A. M. Davies, examiner, four candidates were examined: one for master and two for mate, coasting; and one for a master's temporary certificate. One candidate failed for mate, coasting.

At Edmonton, Alta., Capt. A. D. Grant, examiner, no candidates were examined.

INLAND WATERS DIVISION.

At Toronto, Ont., Capt. H. W. King, examiner, 139 candidates were examined: twenty-two for master and twenty-six for mate, coasting; thirty-one for master and twenty-seven for mate, inland waters; nine for master and five for mate, minor waters; and nineteen for master's temporary certificates. Sixteen candidates failed: three for master and one for mate, coasting; two for master and one for mate, inland waters; five for master and two for mate, minor waters; and two for master's temporary certificates. Five persons underwent the sight tests, one failed.

At Collingwood, Ont., Capt. Geo. C. Coles, examiner, thirty-one candidates were examined: three for master and four for mate, coasting; five for master and twelve for mate, inland waters; three for master, minor waters; and four for master's temporary certificates. Five candidates failed: one for master and one for mate, coasting; one for master and one for mate, inland waters; and one for master, minor waters.

At Kenora, Ont., Capt. Geo. P. Phillips, examiner, four candidates were examined for master's temporary certificates.

7 GEORGE V, A. 1917

At West Selkirk, Man., Capt. M. Thordarson, examiner, one candidate was examined for master, inland waters.

CERTIFICATES ISSUED.

During the year the following numbers and grades of certificates have been issued to masters and mates: eighteen masters', nineteen mates' and twenty-one second mates' sea-going certificates of competency; ninety-six masters' and ninety-four mates' coasting certificates of competency; thirty-five masters' and thirty-seven mates' inland waters certificates of competency; thirty-eight masters' and thirteen mates' minor waters certificates of competency; and thirty-six masters' temporary certificates. A complete list of masters' and mates' certificates issued during the year follows.

RECEIPTS AND EXPENDITURE.

The total amount collected in the way of examination fees for certificates during the twelve months ended March 31, 1916, was \$4,857.73, and the amount expended on account of this service was \$13,828.13, an excess of expenditure over receipts of \$8,970.40.

The following statement shows the total receipts and expenditure on account of masters and mates during the last ten years:—

	Expenditure.	Receipts.
For the fiscal year ended, March 31, 1907 (9 months).....	\$ 5,934 16	\$ 2,294 50
“ “ March 31, 1908.....	11,508 31	4,306 05
“ “ March 31, 1909.....	8,244 56	4,192 50
“ “ March 31, 1910.....	6,662 52	4,314 50
“ “ March 31, 1911.....	5,801 62	4,446 61
“ “ March 31, 1912.....	7,226 54	3,970 00
“ “ March 31, 1913.....	9,992 66	3,639 06
“ “ March 31, 1914.....	13,273 11	5,558 75
“ “ March 31, 1915.....	12,723 17	4,561 00
“ “ March 31, 1916..	13,828 13	4,857 73
Expenditure.....	\$95,194 78	\$42,140 70
Receipts..	42,140 70	
Excess of expenditure over receipts.....	\$53,054 08	

PILOTAGE.

The Minister of Marine and Fisheries is the Pilotage Authority in the pilotage districts of Montreal and Quebec, and all matters of pilotage in those districts are controlled by the Minister through a general superintendent at Quebec.

In the pilotage district of Montreal there are fifty-one pilots and seventeen apprentices and in the pilotage district of Quebec there are sixty-four pilots and twenty-one apprentices. Pilots in these two districts receive all their earnings less five per cent in the Montreal district and seven per cent in the Quebec district which is paid into their respective Decayed Pilots' Funds. The total gross earnings of the Montreal pilots for the twelve months ended December 31, 1915, amounted to \$109,306.74, and the total gross earnings of the Quebec pilots during the same period amounted to \$132,806.59. All expenses of these services are paid out of public funds, and during the twelve months ended March 31, 1916, amounted to \$41,580.29.

SESSIONAL PAPER No. 21

Retired pilots of the Montreal and Quebec districts are regularly paid a yearly pension of \$300 each out of their respective Decayed Pilots' Funds, and retired pilots of the Quebec district are paid in addition a yearly Government pension of \$300, those Government pensions for the twelve months ended March 31, 1916, amounting to \$8,558.33.

Extracts from the annual (1915) returns of the general superintendent form an appendix to this report.

Of the thirty-nine other pilotage authorities constituted under the authority of the Governor in Council in pursuance of the provisions of the Canada Shipping Act, twenty-nine have sent in returns for 1915, extracts from which also form an appendix to this report.

I have the honour to be, sir,

Your obedient servant,

B. F. BURNETT,
*Officer in Charge, Masters and Seamen
Branch.*

APPENDIX A.

List of Sea-going Certificates of Competency issued to Masters, Mates and Second Mates, during the twelve months ended March 31, 1916.

No. of Certificate.	Date of Certificate.	Name.	Grade.	Address.	Where Examination was Passed.	Fee.
	1915.					\$ cts.
4082	April 1	Edward Wallace Hickey	Master..... S/S of fore- and aft.	North Sydney, N.S.	Halifax, N.S.....	15 00
4083	" 1	Calvin David Kenny...	Master..... S/S only.	Halifax, N.S.....	Halifax, N.S.	15 00
4084	" 8	John V. Redmond	Mate	Weehawken, New Jersey	Yarmouth, N.S.	8 00
4085	" 13	Hugh Charlton Warner..	Master.....	Bridgewater, N.S...	"	15 00
4086	" 13	Charles Max Cochrane...	2nd Mate.. S/S only.	Hantsport, N.S.....	"	8 00
4087	" 20	Charles Rock. Soper.	Mate S/S only.	Plymouth, Eng	Victoria, B.C..	8 00
4088	" 22	Andrew Mercer.....	Master..... S/S only	Edinburgh, Scotland..	Vancouver, B.C..	15 00
4089	" 22	James Joseph Burke...	Mate..... F. & aft only	Brooklyn, N.Y.....	Yarmouth, N.S...	8 00
4090	" 29..	Donald William Stewart	Master.....	St. Peters, C.B.....	Halifax, N.S..	15 00
4091	May 12	W. Wallace Marshall	Mate	Old Barns, N.S...	"	8 00
4092	" 21	Vernon Hirtle.....	Mate F. and Aft and Steam- ships Mate.	Halifax, N.S.	"	8 00
4093	" 21..	John Lewis Jones.	Mate	New York, U.S.A	Yarmouth, N.S..	8 00
4094	June 10.	Robert Hiram Hayward	2nd Mate.. Fore and aft only.	West Dublin, N.S...	Halifax, N.S...	8 00
4095	" 28	Haines R. P. Marshall.	Master..	Weymouth North, N.S	St. John, N.B.....	15 00
4096	" 29	John Edward Levine...	2nd Mate.. S/S only.	San Francisco, U.S.A.	Victoria, B.C.	8 00
4097	July 10.	Joseph Gilbert.....	2nd Mate.. S/S only..	Halifax, N.S.....	Halifax, N.S.....	8 00
4098	" 10	Christian A. P. Jensen	Master.. S/S only..	Port Antonio, Jamaica	Yarmouth, N.S...	15 00
4099	" 14..	Waldo Robert Smeltzer.	Mate.....	Mahone Bay, N.S...	Halifax, N.S...	8 00
4100	" 16	George Clark B. Liley..	2nd Mate.	South Hill Bank Gravesend, Eng.	Victoria, B.C.	8 00
4101	" 23..	Robert Winter.....	Master.. S/S only.	Newcastle-on-tyne, Eng.	"	15 00
4102	Aug. 16.	Harold Stuart Jones.	Master..... S/S only.	Victoria, B.C.....	"	15 00
4103	" 16	Herbert Sedgwick Hur- ley.	2nd Mate.. S/S only.	Vancouver, B.C.....	"	8 00
4104	" 28	Even Nilson.....	2nd Mate.. S/S only.	Yarmouth, N.S.....	Yarmouth, N.S...	8 00
4105	" 28..	Philip Fairbairn	2nd Mate.	New York, U.S.A.	"	8 00
4106	Sept. 4	Thomas C. Bannerman..	Mate...	Halifax, N.S.....	Halifax, N.S...	8 00
4107	" 8	Herbert William Doyle.	Master.. S/S and F. and aft.	"	"	15 00
4108	" 13.	James Archie Sanford.	Mate.....	Burlington, N.S.....	Yarmouth, N.S...	8 00
4109	Oct. 4	Baxter Barbour	Master.	St. John's, N.F.L.	Halifax, N.S....	15 00
4110	" 13	Samuel Robinson.	Mate..... S/S only.	Vancouver, B.C.....	Vancouver, B.C..	8 00
4111	" 26.	William J. Balcom	Master.. Fore and aft only.	Halifax, N.S.....	Halifax, N.S.....	15 00
4112	" 26	Austin Doyle.....	Master.. Fore-and-aft only.	"	"	15 00
4113	Nov. 6	James Alexander Suiter.	2nd Mate..	New Zealand.....	Victoria, B.C..	8 00

SESSIONAL PAPER No. 21

LIST of Sea-going Certificates of Competency issued to Masters, Mates and Second Mates, during the twelve months ended March 31, 1916.

No. of Certificate.	Date of Certificate	Name.	Grade.	Address.	Where Examination was Passed	Fee.
	1915.					\$ cts.
4114	Nov. 17	Charles R. Churchill...	2nd Mate S/S only.	Halifax, N.S.,.....	Halifax, N.S.,.....	8 00
4115	" 17.	George Williams.	Master.. S/S only.	New York, N.Y.	Halifax, N.S.	15 00
4116	" 30..	John Cockle.....	Master..	Vancouver, B.C..	Victoria, B.C.	15 00
4117	Dec. 7	Herbert Sydney Butler.	2nd Mate. S/S only.	Harlesden, London, Eng.....	"	8 00
4118	" 7	Percy M. Cave Eslick	Mate S/S only.	San Francisco, U.S.A.	Vancouver, B.C...	8 00
4119	" 10	George Gardner Green..	Mate	Liverpool, Eng..	Interim Certifi- cate.....	No fee
4120	" 23	Daniel McGarvie	2nd Mate	Halifax, N.S..	Halifax, N.S.	8 00
	1916					
4121	Jan. 10.	Joseph Champion.	2nd Mate.	"	"	8 00
4122	" 13..	Henry Riginald Bilton	Master..... S/S only.	Victoria, B.C. ...	Victoria, B.C.,....	15 00
4123	" 15	Louis Alfred Doyle....	2nd Mate.... S/S only.	Halifax, N.S....	Halifax, N.S. ...	8 00
4124	" 24.	Douglas Paterson.....	Mate S/S only.	Harwich Essex, Eng	St. John, N.B.,....	8 00
4125	Feb. 11	Cecil Montague Tice..	Mate S/S only.	Ilford Essex, Eng...	Halifax, N.S. ...	8 00
4126	" 11	Edward Prigent.....	Mate S/S only.	Hull, Eng..	Yarmouth, N.S..	8 00
4127	" 15.	John Irvine .	Mate S/S only.	New York, U.S.A....	"	8 00
4128	" 22...	Thomas Charles M. Cotton.....	2nd Mate.... S/S and fore and aft.	Halifax, N.S.,.....	Halifax, N.S..	8 00
4129	" 22...	Charles Thomas Styan	Mate S/S only.	San Francisco, U.S.A..	Victoria, B.C.,....	8 00
4130	" 22	Gunnar Stolt..	2nd Mate	Halifax, N.S. ...	Halifax, N.S.	8 00
4131	March ..	Edward Alfred LeBlanc.	2nd Mate..	North Sydney, N.S...	Yarmouth, N.S...	8 00
4132	"	Lawson Soley Cochrane.	2nd Mate....	New York, U.S.A.....	"	8 00
4133	" 2...	John Frederick Chap- man.	Master... Fore and aft	Windmill Road, Dart- mouth.	Halifax, N.S.,....	15 00
4134	" 3...	William Shearing.	Mate. S/S only.	Victoria, B.C.,.....	St. John, N.B.,....	8 00
4135	" 13.	Robert Goman.....	Master.... S/S only.	Bishopstoke, Eng.....	Yarmouth, N.S...	15 00
4136	" 17...	Cyrene Ronald Mac- donald ..	2nd Mate....	Mount Stewart, P.E.I	Halifax, N.S....	8 00
4137	" 30..	Alfred Wilson Cecil Ro- binson.	Mate	Fernroyd Edinburgh Grove Armley, Leeds.	"	8 00
4138	" 21	Peter Drawneek.	2nd Mate.... Fore and aft only.	St. John, N.B...	St. John, N.B..	8 00
4139	" 23..	William Murray Wilson.	2nd Mate.... S/S only.	47 Lochleven Road, Langside Glasgow, Scotland.	Halifax, N.S....	
7765	April 1	Dennis Edward DeVeau	Mate	Yarmouth, N.S..	Yarmouth, N.S..	6 00
7766	" 1..	Philip John Stinson	Mate	Cobourg, Ont...	Toronto, Ont	6 00
7767	" 1..	Llewelyn Bragg.	Master..	Halifax, N.S..	Halifax, N.S.	15 00
7768	" 1	John James Moulton.	Master....	Halifax, N.S. ...	Halifax, N.S.,....	15 00
7769	" 1	Kenneth LaRush	Mate	St. Catharines, Ont.	Toronto, Ont	6 00
7770	" 6.	Francois X. L. P. de Bellefeuille.	Mate.....	Three Rivers, P.Q..	Quebec, P.Q.,....	6 00
7771	" 6	Joseph Elphege Blais...	Master....	St. Joseph de Sorel, P.Q.	Quebec, P.Q.	15 00
7772	" 6.	Alfred Ernest Michaud.	Master..	Richibucto, N.B...	Halifax, N.S.,....	15 00

LIST of Certificates of Competency issued to Masters and Mates of Coasting and Inland Waters Vessels during the twelve months ended March 31, 1916.

No. of Certificate.	Date of Certificate	Name.	Grade.	Address.	Where Examination was Passed.	Fee.
	1915					\$ cts.
7773	April 6.	John Samuel Arsnauld.	Master.....	Baddeck, C.B	Halifax, N.S. .	15 00
7774	" 6	William Albert Downey	Master..	Amherst, N.S.....	Halifax, N.S.....	15 00
7775	" 6	Neil Landry.	Master....	Halifax, N.S.....	Halifax, N.S.....	15 00
7776	" 6	Henry W. King	Master....	Toronto, Ont.....	Montreal, P.Q	15 00
7777	" 8	Frederick Rand Merriam.	Mate.....	Port Greville, N.S...	Yarmouth, N.S	6 00
7778	" 8..	William Edmond Cornett.	Mate	Owen Sound, Ont	Toronto, Ont	6 00
7779	" 8.	Herbert James Aitken	Master.....	Courtright, Ont.....	Toronto, Ont.....	15 00
7780	" 8	William Dalton.....	Mate.	Toronto, Ont.....	Toronto, Ont	6 00
7781	" 8	Robert John Wilson.	Mate.	Midland, Ont..	Toronto, Ont	6 00
7782	" 8	Joseph A.W. Tremblay..	Master..	Les Eboulement, P.Q.	Quebec, P.Q.....	15 00
7783	" 8	Willie Brais	Master..	Beauharnois, P.Q	Quebec, P.Q....	15 00
7784	" 8	Phidime F. E. Chouinard.	Mate.....	St. Jean Port Joli, P.Q.	Quebec, P.Q.....	6 00
7785	" 8.	Joseph Benoit A. Caron.	Master..	L'Ilet, P.Q..	Quebec, P.Q.	15 00
7786	" 13	Arthur Sudds.	Master..	Kingston, Ont	Kingston, Ont	15 00
7787	" 13	Michael John Lawless.	Master..	Kingston, Ont	Kingston, Ont..	15 00
7788	" 13	Lewis Arnold Orr.	Mate	Kingston Ont	Kingston, Ont.	6 00
7789	" 13	John Thomas McAllister.	Mate	St. John, N.B..	St. John, N.B..	6 00
7790	" 14	Laurence Sinclair.....	Mate	Vancouver, B.C	Vancouver, B.C..	6 00
7791	" 14...	Arthur Wimbourne Brannen.	Master..	Newellton Cape, N.S.	Yarmouth, N.S...	15 00
7792	" 14	William Mullins Snow.	Master..	Crapaud, P.E.I.....	Charlottetown, P.E.I.	15 00
7793	" 14	Cecil John Gore Wray.	Master..	Victoria, B.C.	Victoria, B.C.	15 00
7794	" 14	Harry Benjiman Bruhm	Mate.....	Montague, P.E.I	Charlottetown, P.E.I.	6 00
7795	" 14	Frederick Lewis Moore..	Master.....	Westport, N.S.....	Yarmouth, N.S..	15 00
7796	" 14	Oscar William Patterson.	Mate	Toronto, Ont	Toronto, Ont	6 00
7797	" 14	William Honsberger..	Mate.....	Thorold, Ont	Toronto, Ont.....	6 00
7798	" 14	Alex. Forquhar MacLennan.	Mate	Midland, Ont	Toronto, Ont	6 00
7799	" 16..	Peter McKay.....	Master..	Owen Sound, Ont	Toronto, Ont	15 00
7800	" 16	Daniel Emile Fraser	Master..	Isle Verte, P.Q	Quebec, P.Q.	15 00
7801	" 20	Wilbert Beatty.....	Mate	Midland, Ont..	Toronto, Ont.	6 00
7802	" 20.	James Belmont.....	Master..	King's County, N.B	St. John, N.B.....	15 00
7803	" 20.	Joseph Oscar Sicotte..	Master...	Valleyfield, P.Q.....	Montreal, P.Q	15 00
7804	" 20	David Clifford McKee..	Master..	Lorneville, N.B..	St. John, N.B..	15 00
7805	" 20..	Joseph Laurent O. Perreault.	Mate.....	Montreal, P.Q.....	Montreal, P.Q.....	6 00
7806	" 20	Pierre Philippe Bibeau.	Master..	St. Joseph de Sorel, P.Q.	Montreal, P.Q...	15 00
7807	" 20.	Eudore Tousignant..	Master..	Montreal, P.Q	Montreal, P.Q	15 00
7808	" 20..	Joseph Ernest Aussant	Master..	St. Joseph de Sorel, P.Q	Montreal, P.Q	15 00
7809	" 20..	Harold Francis Hallifax.	Mate	Collingwood, Ont..	Collingwood, Ont	6 00
7810	" 20.	Norman McKay.....	Master..	Owen Sound, Ont	Toronto, Ont	15 00
7811	" 20.	Peter Embree.....	Masret....	Port Hawkesbury, N.S.	North Sydney, N.S.	15 00
7812	" 20..	Albert Edward Stinson.	Master.....	Toronto, Ont..	Toronto, Ont..	15 00
7813	" 20...	Hugh Davidson.....	Mate.....	Goderich, Ont.	Toronto, Ont	6 00
7814	" 20.	Harry Leaney.....	Mate.....	Owen Sound, Ont.....	Toronto, Ont.....	6 00
7815	" 20	Fred. Ferguson Foote...	Mate	Fergus, Ont.	Toronto, Ont	6 00
7816	" 22.	Thomas Harrington Johnston.	Master.....	Port Dalhousie, Ont...	Toronto, Ont..	15 00
7817	" 22	Harold Victor Morehouse.	Master...	Namu, B.C.	Vancouver, B.C..	15 00
7818	" 22	Harold Alphonsus Kelly	Master..	Kippawa, P.Q	Montreal, P.Q	15 00
7819	" 22.	James Chesley Moore...	Mate	Sydney, N.S.....	North Sydney, N.S.	6 00
7820	" 22	Frank Douglas Stevens..	Master...	St. John, N.B.....	St. John, N.B.....	15 00

SESSIONAL PAPER No. 21

LIST of Certificates of Competency issued to Masters and Mates of Coasting and Inland-waters Vessels during the twelve months ended March 31, 1916.

No. of Certificate.	Date of Certificate	Name.	Grade.	Address.	Where Examination was Passed.	Fee.
	1915					\$ cts.
7821	April 22.	Edward Trash Terfry..	Master..	Summerville, N.S.....	Halifax, N.S.....	15 00
7822	" 22	Herbert Willard LaRush	" ..	Toronto, Ont.....	Toronto, Ont.	15 00
7823	" 24..	Samuel Nelson Mc-Glennon.	" ..	Toronto, Ont.....	"	15 00
7824	" 24...	David Wilson Burke	" ..	Sarnia, Ont	"	15 00
7825	" 26...	Alfred Francis	Mate	Toronto (West) Ont.	"	6 00
7826	" 26..	John Allan Ewart.	"	Toronto, Ont	"	6 00
7827	" 26..	Leighton Evans.....	"	Vancouver, B.C.....	Vancouver, B.C..	6 00
7828	" 29	Laurence Sampson	"	Halifax, N.S.	Halifax, N.S.	6 00
7829	" 29..	Harold Taylor.	Master.....	New Westminster, B.C.	Vancouver, B.C.	15 00
7830	May 1	Thomas Selby Patter-son.	" ..	Toronto, Ont.....	Toronto, Ont....	15 00
7831	" 4	Michael William Keat-ing.	" ..	Charlottetown, P.E.I	Charlottetown, P.E.I.	15 00
7832	" 4..	Joshua Gallop..	" ..	Halifax, N.S...	Halifax, N.S...	15 00
7833	" 4	John A. McDonald	Mate.....	Pictou, N.S.	"	6 00
7834	" 12.	William Wallace Mars-hall.	Master.....	Old Barnes, N.S.....	"	15 00
7835	" 12	John Allan Williams	"	St. John, N.B.....	St. John, N.B....	15 00
7836	" 12..	Lovell Ross	"	George's Island, N.S..	Halifax, N.S.	15 00
7837	" 17	Joseph Martell Nicoll..	"	Mira Gut, C.B.	North Sydney, N.S.	15 00
7838	" 17.	Ulysse Joseph D'Entre-mont.	Mate.....	West Pubnico, N.S...	Yarmouth, N.S..	6 00
7839	" 17	Basil Knight	"	Souris, P.E.I	Halifax, N.S.	6 00
7840	" 17.	Frank Leslie Truesdale..	"	Kingston, Ont.....	Kingston, Ont.	6 00
7841	" 17.	Michael Ryan	"	Halifax, N.S.	Halifax, N.S.	6 00
7842	" 20.	Herbert James Brian..	"	Kingston, Ont.....	Toronto, Ont.	6 00
7843	" 20	Thomas Boudreau	"	Halifax, N.S.....	Halifax, N.S...	6 00
7844	" 21	Vernon Hirtle..	Master.....	"	"	15 00
7845	" 21	William Everett Ward.	Mate.....	Cobourg, Ont..	Toronto, Ont.	6 00
7846	" 21..	Theophile Arseneault	Master....	New Richmond, P.Q	New Richmond, P.Q.	15 00
7847	" 21.	Isidore Boissonneault.	"	"	"	15 00
7848	" 21.	Narcisse LeBlanc.....	"	"	"	15 00
7849	" 26..	Louis Steen Maloney..	"	Port Arthur, Ont...	West Selkirk, Man	15 00
7850	" 26	Leslie Anderson.....	"	Vancouver, B.C...	Vancouver, B.C..	15 00
7851	" 26	Arthur Leonard McLean	"	"	"	15 00
7852	" 26	Arthur Leonard McLean	Mate	"	"	6 00
7853	" 26	Herbert Longwell Sacret	Master...	"	"	15 00
7854	" 26	Archibald Robert Phelp	Mate.....	Hope Bay, Pender Island, B.C..	Victoria, B.C...	6 00
7855	" 28	John Mathew Bateman	Master..	Stony Island, N.S	Yarmouth, N.S..	15 00
7856	" 31	Joseph Beals	Mate...	Halifax, N.S.....	Halifax, N.S..	6 00
7857	June 1	Leo Towell	Master..	New Westminster, B.C.	Vancouver, B.C..	15 00
7858	" 1	Leo Towell..	Mate.....	"	"	6 00
7859	" 2..	Malcolm McGillivray.	Master....	Poplar Manitoulin, Ont	Collingwood, Ont.	15 00
7860	" 7.	Noah E. Zinck	"	Bayside, N.S.	Halifax, N.S....	15 00
7861	" 7	Benjamin Pope...	Mate.....	Main-a-Dieu, N.S.....	"	6 00
7862	" 7	Frank Norman Martin	Master...	Vancouver, B.C.....	Vancouver, B.C	15 00
7863	" 7..	Frank Norman Martin.	Mate.....	"	"	6 00
7864	" 7..	William Lytle Curry..	Master..	Owen Sound, Ont.....	Collingwood, Ont	15 00
7865	" 7..	Henry Goodfellow..	Mate	Chatham, N.B.....	St. John, N.B..	6 00
7866	" 10	Robert Hiram Hay-ward.	"	West Dublin, N.S	Halifax, N.S.	6 00
7867	" 28.	Alexander Thompson..	Master.....	Arrowhead, B.C.....	Arrowhead, B.C.	15 00
7868	" 28..	John Macphee.....	Mate.....	"	"	6 00
7869	July 6.	Edward Anderson Wray.	Master..	Burlington, Ont.....	Toronto, Ont..	15 00
7870	" 10	Thomas Ormiston	"	Gabarous, N.S.....	Halifax, N.S...	15 00
7871	" 14.	Waldo Robert Smeltzer.	"	Mahone Bay, N.S.	"	15 00
7872	" 14	Frederick L. Corey.	"	Gagetown, N.B	Fredericton, N.B	15 00
7873	" 14.	Arthur Tildon Murphy..	Mate.....	North Vancouver, B.C	Vancouver, B.C..	6 00
7874	" 14.	William Stewart Nicholls	Master.....	Vancouver, B.C.	"	15 00

7 GEORGE V. A. 1917

LIST of Certificates of Competency issued to Masters and Mates of Coasting and Inland-waters Vessels during the twelve months ended March 31, 1916.

No. of Certificate.	Date of Certificate	Name.	Grade.	Address.	Where Examination was Passed	Fee.
	1915					\$ cts.
7875	July 16...	Charles John Widgery...	Master	Halifax, N.S.....	Halifax, N.S.,....	15 00
7876	" 16	William Hubley	"	"	"	15 00
7877	" 19..	Elmer Orrin Winter.....	Mate.....	Owen Sound, Ont....	Toronto, Ont.	6 00
7878	" 23	Antone Time	Master..	Ladner, B.C.	Victoria, B.C.	15 00
7879	Aug. 16...	Charles A. Goodwin.	"	Victoria, B.C.....	"	15 00
7880	" 16...	Bernhard T. Brynelsen..	"	Vancouver, B.C..	Vancouver, B.C...	15 00
7881	" 16..	Ambrose Guy.....	Mate	St. John, N.B.	Halifax, N.S.	6 00
7882	" 16..	Thomas Victor Darling.	Master.....	Callander, Ont.	Callander, Ont...	15 00
7883	" 16.	Ernest George Conley..	"	Vancouver, B.C.....	Victoria, B.C.	15 00
7884	" 16	Ernest George Conley..	Mate	"	"	6 00
7885	" 25..	Simoon Cayer	"	St. Antoine, P.Q.	Quebec, P.Q.....	6 00
7886	" 28..	Asa Howard Myers.....	Master...	Halifax, N.S.....	Halifax, N.S.	15 00
7887	" 28	Edward Lloyd Quinn	Mate	Senora, S.	"	6 00
7888	" 28..	Arthur Clifton Little...	Master.....	Port Moody, B.C.	Victoria, B.C...	15 00
7889	" 28..	Frederick S. Colborne	"	St. John, N.B...	St. John, N.B..	15 00
7890	" 30.	William John Stone.	"	Port Alberni, B.C....	Victoria, B.C.	15 00
7891	" 30	Ambrose Guy	"	St. John, N.B.	Halifax, N.S.	15 00
7892	Sept. 10	John Moffatt	"	Caldwells Mills, Ont	Ottawa, Ont.	15 00
7893	" 15..	William Harold Turner.	"	Vancouver, B.C....	Vancouver, B.C..	15 00
7894	" 15	William Harold Turner.	Mate....	"	"	6 00
7895	" 22..	Murdoch Campbell..	"	"	"	6 00
7896	" 27.	Robert Ward	"	Toronto, Ont.	Toronto, Ont	6 00
7897	" 28..	Wm. Frederick Billington.	Master.....	Victoria, B.C.....	Victoria, B.C....	15 00
7898	Oct. 4	James Arthur Hultz.	Mat	Halifax, N.S.....	Halifax, N.S.	6 00
7899	" 4	Emery Peters.....	"	Westport, N.S.....	Yarmouth, N.S...	6 00
7900	" 9..	Jesse Leonard Wright	"	Beaver Harbour, N.B.	St. John, N.B.	6 00
7901	" 9..	Aubrey Malcolm Burgess.	"	Port Mouton, N.S....	Halifax, N.S....	6 00
7902	" 9..	William Francis Howell	Master.....	Thorold, Ont.....	Toronto, Ont.....	15 00
7903	" 13..	Dougal Patterson	"	Vancouver, B.C....	Vancouver, B.C...	15 00
7904	" 13	Goldwin Roy Eburne.	Mate. .	"	"	6 00
7905	" 14	Garret Otoole Nagle..	Master...	"	"	15 00
7906	" 14..	Garret Otoole Nagle..	Mate.....	"	"	6 00
7907	" 26..	St. Clair Cann.....	Master....	Westport, N.S.....	Yarmouth, N.S..	15 00
7908	" 26..	Thomas Henry Boudrot	Mate.....	West Arichat, N.S.	Halifax, N.S.	6 00
7909	" 26..	George Critchell.....	"	North Sydney, N.S..	"	6 00
7910	Nov. 2	George Findlay.	"	Corunna, Ont	Toronto, Ont	6 00
7911	" 12	Allan Outram Clampitt.	Master.....	Vancouver, B.C.....	Victoria, B.C.	15 00
7912	" 17	Louis Alfred Doyle...	Mate.	Halifax, N.S.	Halifax, N.S....	6 00
7913	" 29	Keith Eugene Ryer...	"	Shelburne, N.S.	"	6 00
7914	" 29	Alexander A. King...	Master.....	Halifax, N.S...	"	15 00
7915	Dec. 7..	William Sencabaugh	"	Charlottetown, P.E.I.	Charlottetown, P.E.I.	15 00
7916	" 7..	Joseph Napoleon Riverrin.	"	Pointe-a-Pic, P.Q....	Quebec, P.Q..	15 00
7917	" 22	Arthur Wellington Cobham.	"	St. John, N.B...	St. John, N.B.	15 00
7918	" 22	Arthur L. Waite.....	Mate.	Halifax, N.S.....	Halifax, N.S.	6 00
7919	" 22	Philius Beriault...	Master...	St. Telesphore, P.Q.	Montreal, P.Q....	15 00
7920	" 23..	Arthur Wm. Brookman Calder.	Mate.....	Sydney, N.S..	North Sydney, N.S.	6 00
7921	" 23.	Isaiah Charles Rhude..	Master.....	Charlottetown, P.E.I.	Charlottetown, P.E.I.	15 00
7922	" 24..	Frank Earl Gould.....	"	Toronto, Ont.....	Toronto, Ont	15 00
7923	" 24	Frank Earl Gould.....	Mate.....	"	"	6 00
7924	" 27.	Charles Edward Kilby	Master..	Vancouver, B.C...	Vancouver, B.C..	15 00
7925	" 27..	Herman Lysell	Mate	"	"	6 00
7926	" 28	William Malcolm	Master..	Toronto, Ont	Toronto, Ont	15 00
7927	" 29	Charles Ernest Landry.	Mate.....	Halifax, N.S..	Halifax, N.S. .	6 00
7928	" 31	John Wesley Alexander	"	Gore Bay, Ont.	Toronto, Ont...	6 00
7929	" 31..	Walter Jacob Holler...	Master.....	Warton, Ont.	"	15 00

SESSIONAL PAPER No. 21

LIST of Certificates of Competency issued to Masters and Mates of Coasting and Inland-waters Vessels during the twelve months ended March 31, 1916.

No. of Certificate.	Date of Certificate	Name.	Grade.	Address.	Where Examination was Passed.	Fee.
	1916					\$ cts.
7930	Jan. 8...	Gustav Hansen.....	Master.....	Prince Rupert, B.C.	Prince Rupert, B.C.	15 00
7931	" 10...	Joseph Champion	Mate	Halifax, N.S.	Halifax, N.S.	6 00
7932	" 10...	Joseph Florian Lacombe	"	Montmagny, P.Q..	Quebec, P.Q.	6 00
7933	" 10...	John Albert Felker.	"	Goderich, Ont	Toronto, Ont..	6 00
7934	" 11.	Gordon Clement Roberts.	"	Fontenelle, Gaspé, P.Q.	Yarmouth, N.S...	6 00
7935	" 13...	Melvin Anson Loughheed	"	Gore Bay, Ont..	Collingwood, Ont	6 00
7936	" 13...	John Frederick Rock	Master..	Warton, Ont.	Toronto, Ont	15 00
7937	" 13...	Robert Roy Brown	"	Toronto, Ont	"	15 00
7938	" 13...	Herbert Johnson Little..	Mate	Owen Sound, Ont.	"	6 00
7939	" 13	Isaac Lincoln Mateer.	"	Sarnia, Ont	"	6 00
7940	" 18...	Clifford George Schlochow.	Master...	Toronto, Ont..	Toronto, Ont..	15 00
7941	" 18.	Clifford George Schlochow.	Mate.....	"	"	6 00
7942	" 18.	Francois X. David Bouille.	"	Ange Gardien, P.Q...	Quebec, P.Q.....	6 00
7943	" 18.	Alex Buntin Wilson..	Master..	Sarnia, Ont..	Toronto, Ont	15 00
7944	" 18.	Roy Canick Macdonald.	Mate.	"	"	6 00
7945	" 18	George Ferguson.	"	Warton, Ont..	"	6 00
7946	" 18...	Thomas McLeod	Master...	Tara, Ont	"	15 00
7947	" 18...	John Russell Smith	Mate	Vancouver, B.C..	Vancouver, B.C..	6 00
7948	" 19.	Gordon Wilmer Macdonald.	"	Goderich, Ont	Toronto, Ont.....	6 00
7949	" 20	Thomas Basil Kelly..	Master....	Halifax, N.S.....	Halifax, N.S.....	15 00
7950	" 20.	William Alexander Boulton	Mate.....	Collingwood, Ont..	Collingwood, Ont.	6 00
7951	" 20...	James Hill..	"	Warton, Ont	Toronto, Ont...	6 00
7952	" 20...	Ainsley Edward McGee	"	"	"	6 00
7953	" 20...	Alfred John Story..	"	Owen Sound, Ont.	"	6 00
7954	" 24.	Alex Buist Weber..	"	Collingwood, Ont...	Collingwood, Ont.	6 00
7955	" 24...	Richard Augustine Sullivan.	"	Halifax, N.S.....	Halifax, N.S....	6 00
7956	" 24...	John Albert McFadden.	"	Collingwood Ont,	Collingwood, Ont	6 00
7957	" 24...	Edward Reid..	Master..	Bayfield, Ont.	Toronto, Ont	15 00
7958	" 24.	Arthur Lawrence Huston	Mate.....	Presqu' Isle, Ont..	"	6 00
7959	" 25.	Gustaf Hultgren.....	Master..	Windsor, Ont.....	"	15 00
7960	" 25.	Frederick Preston...	Mate.	Vancouver, B.C....	Vancouver, B.C...	6 00
7961	" 25.	James Eric McLeod.....	"	Owen Sound, Ont....	Toronto, Ont	6 00
7962	" 25.	David Henry Porter..	Master....	Allinford, Ont.....	"	15 00
7963	" 25	Jess Franklin Oliver....	"	Vancouver, B.C.....	Vancouver, B.C...	15 00
7964	" 25...	Gustaf Hultgren	Mate	Windsor, Ont	Toronto, Ont	6 00
7965	" 28.	Joseph Henry Rockwell.	Master.....	River Hebert, N.S.	St. John, N.B....	15 00
7966	" 28...	Conrad Lafreniere.....	"	St. Thomas de Pierre-ville, P.Q.	Quebec, P.Q.....	15 00
7967	" 28..	Francis Sylvester Middleton.	"	Port McNicoll, Ont...	Toronto, Ont.....	15 00
7968	" 28	Bart Dudley Millard..	"	Sarnia, Ont	"	15 00
7969	Feb. 1	Robert Orr McLeod	Mate	Pictou, Ont...	"	6 00
7970	" 1	Charles Alvin Neal	Master..	Courtright, Ont.	"	15 00
7971	" 8..	John Watson.	Mate	Kingston, Ont	Kingston, Ont.	6 00
7972	" 10	James Reoch	Master...	Nottawa, Ont	Collingwood, Ont.	15 00
7973	" 10.	Reginald McPherson..	Mate	Owen Sound, Ont...	Toronto, Ont.....	6 00
7974	" 10	Charles Dyon	Mate	Toronto, Ont	Toronto, Ont.	6 00
7975	" 10	Fred. Robert Irish..	Master..	Cobourg, Ont....	"	15 00
7976	" 11...	Joseph Romeo Mercier..	Mate.....	Bienville, Levis, P.Q..	Quebec, P.Q.....	6 00
7977	" 11	Joseph Benoni Blouin	"	Quebec, P.Q.	"	6 00
7978	" 11	Joseph Adjutor Lemay.	Master..	Portneuf, P.Q.	"	15 00
7979	" 11	Hector Charbonneau.	"	Sorel, P.Q.	"	15 00
7980	" 15.	William Wellington Harding.	Mate	Lower St. Mary, N.B.	St. John, N.B.	6 00
7981	" 15...	William Carl Gould.....	Master....	Jeddore, N.S.....	Halifax, N.S.....	15 00
7982	" 15.	Francois X. J. Seguin.	"	Hull, P.Q..	Montreal, P.Q.	15 00
7983	" 15	William John Grier...	Mate	Collingwood, Ont....	Collingwood, Ont.	6 00

7 GEORGE V, A. 1917

LIST of Certificates of Competency issued to Masters and Mates of Coasting and Inland waters Vessels during the twelve months ended March 31, 1916.

No. of Certificate.	Date of Certificate	Name.	Grade.	Address.	Where Examination was Passed.	Fee.
	1916.					\$ cts.
7984	Feb. 15	Honore Desgroseilliers.	Master.....	Cascades Point, P.Q.	Montreal, P.Q....	15 00
7985	" 15..	Thomas Gordon Weston	"	Richibucto, N.B....	Halifax, N.S....	15 00
7986	" 15.	Thomas Gordon Weston	Mate	"	"	6 00
7987	" 15	Neil Arbuthnot.....	"	Collingwood, Ont.....	Collingwood, Ont.	6 00
7988	" 15	Charles Mood.....	Master...	Halifax, N.S.....	Halifax, N.S.....	15 00
7989	" 15..	John Fraser Irvine.....	Mate....	"	"	6 00
7990	" 15..	John Fulton O'Hara	Master.....	Isaac Harbour, N.S...	"	15 00
7991	" 15	William Marwick.....	Mate	Goderich, Ont	Toronto, Ont.	6 00
7992	" 15..	William Marwick.	Master...	"	"	15 00
7993	" 15.	Clifford Ross Bradley	"	Little Current, Ont	Collingwood, Ont	15 00
7994	" 15.	George Harold B. Scott	"	Victoria Harbour, Ont	Toronto, Ont....	15 00
7995	" 15	George Harold B. Scott	Mate	"	"	6 00
7996	" 15	Charles Ernest Rush..	Master....	Owen Sound, Ont.	"	15 00
7997	" 15	Charles Francis.....	"	Picton, Ont.....	"	15 00
7998	" 15	Neil Gordon McLaren	Mate	Owen Sound, Ont.	"	6 00
7999	" 18	Louis Philippe Garneau	Master.....	Ste. Croix, P.Q	Quebec, P.Q.....	15 00
8000	" 22	Alban Martin Roque..	"	Blind River, Ont.	Collingwood, Ont.	15 00
8001	" 22	Charles Benner Kirk...	"	Lakeport, Ont	Toronto, Ont.	15 00
8002	" 22.	William Luther Mac-Leod.	"	Halifax, N.S...	Halifax, N.S....	15 00
8003	" 22	Robert Taylor Naughty	Mate.....	Vancouver, B.C.....	Vancouver, B.C.	6 00
8004	" 22.	Alexander F. MacLennan.	Master.....	Midland, Ont	Toronto, Ont....	15 00
8005	" 22	Albert Lavigne.....	"	"	"	15 00
8006	" 22.	Robert John Wilson.	"	"	"	15 00
8007	" 22	Gunnar Stolt.....	Mate	Halifax, N.S	Halifax, N.S.....	6 00
8008	" 22	Charles Alvin Neal.	Mate	Courtright, Ont.	Toronto, Ont.....	6 00
8009	" 24	Raphael Chevrier..	"	St. Joseph de Sorel, P.Q.	Interim Cert	
8010	March 1	James Edgar Gould...	Master...	Dalhousie, N.B...	St. John, N.B...	15 00
8011	" 1	Arnol George H. Bryan..	Mate.....	Collingwood, Ont..	Collingwood, Ont	6 00
8012	" 1	George Harboun King	"	Halifax, N.S...	Halifax, N.S.	6 00
8013	" 1	Joseph Napoleon Millette.	Master	St. Anne de Sorel, P.Q.	Quebec, P.Q.....	15 00
8014	" 1..	Joseph A. A. Provencal	"	Sorel, P.Q.....	"	15 00
8015	" 1	Colin Thompson McKay	"	Lockeport, N.S....	Halifax, N.S....	15 00
8016	" 1	John Shoemaker.....	Mate	Collingwood, Ont	Collingwood, Ont.	6 00
8017	" 1	John Shoemaker.....	Master..	"	"	15 00
8018	" 1..	Norman McLeod Scott..	"	Hamilton, Ont.	Toronto, Ont.....	15 00
8019	" 1	Alexander Geddes.....	Mate.	"	"	6 00
8020	" 1	Malcolm MacDonald..	"	Goderich, Ont..	"	6 00
8021	" 2	Edward Alfred LeBlanc	Master...	North Sydney, N.S..	Yarmouth, N.S...	15 00
8022	" 2	Arthur Moore	"	Bear River, N.S.	"	15 00
8023	" 2	Noe Gervais.....	"	St. Michel, P.Q.....	Quebec, P.Q.....	15 00
8024	" 2	Joseph Anselme House..	"	Ste. Emilie, P.Q..	"	15 00
8025	" 4	Andrew Ness.....	Mate.....	Prince Rupert, B.C	Prince Rupert, B.C	6 00
8026	" 4..	Harold Roy Jackson.	"	Upper Economy, N.S.	St. John, N.B.	6 00
8027	" 4	John Peter McLeod	Master..	Collingwood, Ont.....	Collingwood, Ont.	15 00
8028	" 4	Wilfred John Hawman	Mate	"	"	6 00
8029	" 4..	Carl Eugene Christian-sen.	Master...	Vancouver, B.C.....	Vancouver, B.C..	15 00
8030	" 4	Thomas Walter Nichols	"	Midland, Ont.....	Toronto, Ont.....	15 00
8031	" 6	Carl Eugene Christian-sen.	Mate	Vancouver, B.C..	Vancouver, B.C..	6 00
8032	" 6	Edward Alexander Booth.	Master....	Kingston, Ont..	Toronto, Ont....	15 00
8033	" 7..	Thomas Dreyer.	Mate.	Collingwood, Ont....	Collingwood, Ont.	6 00
8034	" 7..	Albert Chouinard.	"	St. Jean Port Joli, P.Q.	Quebec, P.Q.....	6 00
8035	" 7	Joseph Edouard H. Filteau.	Master.....	St. Antoine, P.Q.	"	15 00
8036	" 7..	Simeon Cayer.....	Mate.	St. Antoine, B.C....	Quebec, P.Q	6 00
8037	" 7..	John Alexander MacDonald.	Master.....	Victoria, B.C	Victoria, B.C...	15 00

SESSIONAL PAPER No. 21

LIST of Certificates of Competency issued to Masters and Mates of Coasting and Inland-waters Vessels during the twelve months ended March 31, 1916.

No. of Certificate.	Date of Certificate	Name.	Grade.	Address.	Where Examination was Passed.	Fee.
	1916.					\$ cts.
8038	March 7...	Frederick Halpin Cole.	Master	Victoria, B.C.	Victoria, B.C.	15 00
8039	" 7...	Rupert Protheroe.....	"	Vancouver, B.C..	Vancouver, B.C..	15 00
8040	" 7...	Anson Burke Smith.....	"	Midland, Ont.....	Toronto, Ont.	15 00
8041	" 7...	Robert Laing.	Master.....	Elora, Ont.	Totonto, Ont.	15 00
8042	" 7...	Anson Burke Smith.	Mate	Midland, Ont	"	6 00
8043	" 9.	John Alexander Ferguson.	Master....	Garden Island, Ont.	Collingwood, Ont.	15 00
8044	" 13	Otty Harold Brown...	Mate	St. John N.B..	St. John, N.B..	6 00
8045	" 13..	George Hindman	"	Sarnia, Ont	Collingwood, Ont.	6 00
8046	" 15	James Gregory Fletcher.	Master.....	Vancouver, B.C.....	Vancouver, B.C..	15 00
8047	" 18.	Cyrene Ronald Mac-Ronald.	Mate...	Mount Stewart, P.E.I	Halifax, N.S.....	6 00
8048	" 18...	Frank Victor Ryan	"	Halifax, N.S...	"	6 00
8049	" 18...	Walter Archibald Kaiser	"	Port Bickerton, N.S..	"	6 00
8050	" 18..	Wilbert Beatty.....	Master..	Midland, Ont.....	Toronto, Ont	15 00
8051	" 18	Robert Graham.....	Mate	Collingwood, Ont..	Collingwood, Ont.	6 00
8052	" 21	Joseph H. Bouffard.....	"	St. Laurent Island of Orleans, P.Q.	Quebec, P.Q..	6 00
8053	" 21...	Joseph Aurchien Lallieur..	"	Ste. Croix, P.Q.....	"	600
8054	" 21.	Joseph Daniel Saint Onge.	"	"	"	6 00
8055	" 21...	Alexander McLennan..	"	Vancouver, B.C..	Vancouver, B.C..	6 00
8056	" 21.	Alf. Sangstad.....	Master.....	"	"	15 00
8057	" 23...	Andrew Dwight Martin.	"	West Bathurst, N.B	St. John, N.B..	15 00
8058	" 23...	Vernon Opie Peordon..	"	Montague, P.E.I.	Halifax, N.S..	15 00
8059	" 23	Vernon Opie Peordon	Mate	"	"	6 00
8060	" 23...	Frederick Harland Faulkner.	"	West Jeddore, N.S....	"	6 00
8061	" 23...	Burnal F. Schmeisser...	Master....	Lahave, N.S.....	"	15 00
8062	" 23..	John Hanley.....	"	Midland, Ont.....	Toronto, Ont	15 00
8063	" 23	Joseph Archibald Brown	"	Rodney, Ont	"	15 00
8064	" 23	Charles Willard.	Mate	Kingston, Ont	"	6 00
8065	" 23	Harold Arthur Patterson	"	Toronto, Ont.	"	6 00
8066	" 25..	Charles Lynn.	Master.....	Penetang, Ont.....	"	15 00
8067	" 27.	Michael Egan.	Mate	Ottawa, Ont.....	Ottawa, Ont.....	6 00
8068	" 27...	Robert Nick Cosulich	Master....	Port Guichon, B.C.	Vancouver, B.C..	15 00
8069	" 28	Oscar William Patterson	"	Toronto, Ont	Toronto, Ont	15 00
8070	" 28	James Edward Mann..	"	"	"	15 00
8071	" 28	George Gilbert Childs..	"	"	"	15 00
8072	" 29.	Coral Ashton Lyons..	"	Port Dover, Ont.	"	15 00
8073	" 29...	Vere Neil Munroe.....	Mate	Port Edwards, Ont	Toronto, Ont	6 00
8074	" 30	Jean Benoit Deslauriers..	"	Quebec, P.Q.	Interim Certific..	No Fee
8075	" 30	George Wesley Harrison	"	St. Joseph's Island, Ont.	Collingwood, Ont.	6 00
8076	" 30	Charles Wesley Archer.	"	Bracebridge, Ont	Toronto, Ont..	6 00
8077	" 31...	John Henry Solery..	Master....	Toronto, Ont.....	"	15 00

7 GEORGE V, A. 1917

LIST of Masters' Temporary Certificates issued during the twelve months
ended March 31, 1916.

No. of Certi- ficate.	Date of Certificate	Name.	Grade.	Address.	Where Examination was Passed	Fee.
	1916					\$ cts.
106	April 13..	John Albert Cooke	Master..	Grenville, P.Q.	Ottawa, Ont.	5 00
107	" 13..	James Ingram.....	"	The Pas, Man.....	The Pas, Man..	5 00
108	" 13..	John Cameron.....	"	Kingston, Ont.....	Kingston, Ont....	5 00
109	" 20..	George Finan.....	"	Braeside, Ont.....	Ottawa, Ont.....	5 00
110	" 29..	Charles McLeod	"	Cumberland, Ont.	"	5 00
111	May 4	James Jackson.....	"	Indian White Horse, Yukon Territory.		5 00
112	" 13..	Harvey Miller.....	"	Peterborough, Ont..	Toronto, Ont.....	5 00
113	" 14..	Thomas Edgar Drolet.	"	Midland, Ont.....	"	5 00
113	" 7..	William Powles.	"	Glenora, Ont.		5 00
115	" 7..	William Edwin Owen...	"	Richard's Landing, Ont.		5 00
116	" 11..	Albert Franklin Stanton.	"	Port Stanton, Ont.....	Collingwood, Ont	5 00
117	" 28..	William Robert Ander- son.	"	Gravenhurst, Ont	Toronto, Ont.....	5 00
118	" 28...	George Wm. Brownlee	"	Rainy River, Ont.....	Kenora, Ont.....	5 00
119	" 28...	Noah Frederick Hall.	"	Arrowhead, Ont.....	Nelson, B.C.....	5 00
120	July 10...	John Stillman Wilson...	"	Kenora, Ont	Kenora, Ont	5 00
121	" 10	Joseph Deschene.....	"	Arnprior, Ont.....	Ottawa, Ont.....	5 00
122	" 13	Edem Tellier.....	"	Trois Rivières, P.Q.	Quebec, P.Q.....	5 00
123	" 21...	Joseph Adjutor Lemay..	"	Portneuf, P.Q..	"	5 00
124	Aug. 16..	Robert Johnston.....	"	Port Carling, Ont....	Collingwood, Ont	5 00
125	" 16	Augure Duchene.....	"	St. Irene, P.Q.....	Quebec, P.Q.....	5 00
126	" 16..	Albert Allen Jesmer....	"	Corrwall, Ont		5 00
127	" 16...	George Madigan.....	"	Parry Sound, Ont.....	Toronto, Ont.	5 00
128	Sept. 8....	John Eligh.....	"	Kemptville, Ont.....	Ottawa, Ont.....	5 00
129	" 10.	William J. Banting.	"	Edgewood, B.C.....	Arrowhead, B.C.	5 00
130	" 10.	Francis T. Dodds...	"	Kenora, Ont.....	Kenora, Ont.....	5 00
131	" 10	Hemi Carriere.	"	Montebello, P.Q.		5 00
132	" 15	Rosario Lazzaro.....	"	Bracebridge, Ont		5 00
133	" 17.	James Alfred Woods	"	Prince George, B.C..	Victoria, B.C.	5 00
134	" 17	Jacob Myers Collins	"	Fort George (South) B.C.	"	5 00
135	" 28...	Jean J. Crete.	"	Grandes Piles, P.Q.		5 00
136	Oct. 6.	Joseph Dusome.....	"	Penetang, Ont.	Collingwood, Ont	5 00
137	" 22..	James Smith.....	"	Grandes Piles, P.Q..	Quebec, P.Q.....	5 00
138	Dec. 20..	Maxime Cloutier.....	"	"	"	5 00
139	Jan. 18	Louis Theodore Gierke.	"	Atlin, B.C.....	Prince Rupert, B.C.	5 00
140	Feb. 8...	James I. Campbell.	"	Kelowna, B.C.		5 00
141	March 23	Alfred Girard..	"	St. Fulgence, P.Q.		5 00

SESSIONAL PAPER No. 21

APPENDIX B.

EXTRACTS FROM THE ANNUAL RETURNS OF PILOTAGE
AUTHORITIES FOR THE CALENDAR YEAR, 1915.

PILOTAGE DISTRICT OF MONTREAL.

(The Minister of Marine and Fisheries is the Pilotage Authority.)

Pilots.	Date of Appointment.	Age.	Earnings.
			\$ cts.
1 Ferdinand Labranche, resigned Nov. 19, 1915.....	April 8, 1875	69	1,790 28
2 Louis Z. Bouillé.....	Jan. 16, 1878	66	1,700 90
3 Laurent Gauthier.....	Dec. 10, 1879	65	3,063 09
4 Delavoie Nault.....	Dec. 10, 1879	62	2,404 82
5 Wilbrod Gauthier.....	Dec. 10, 1879	63	3,040 50
6 Norbert Arcand.....	Dec. 10, 1880	63	2,210 57
7 Tancrede Bouillé.....	Dec. 11, 1880	62	2,074 54
8 Wilfrid Raymond.....	April 20, 1888	61	2,043 38
9 Joseph P. Hurteau.....	Mar. 20, 1889	55	2,403 50
10 Edouard Perreault.....	Mar. 20, 1889	66	1,392 97
11 Honore Dussault.....	July 16, 1889	62	1,379 92
12 Arthur Briere.....	April 28, 1891	59	2,498 38
13 Alexis Perreault.....	April 28, 1891	53	3,055 39
14 Come Dufresne.....	June 28, 1891	55	2,053 54
15 Aubert Naud.....	July 11, 1893	62	1,795 81
16 Napoleon Dussault.....	April 3, 1894	55	1,975 31
17 Prudent Bellisle.....	April 3, 1894	53	2,455 65
18 Georges Arcand.....	April 3, 1894	51	1,891 85
19 Constant Toupin.....	April 3, 1894	49	1,496 48
20 Georges Perreault.....	Sept. 11, 1894	50	1,915 14
21 Narcisse Bouillé.....	Oct. 9, 1894	56	1,376 98
22 Joseph Leveille.....	June 18, 1895	52	1,921 22
23 Severe Perron.....	April 14, 1896	58	2,234 64
24 Alberic Angers.....	Mar. 14, 1898	41	1,760 17
25 Arthur Belisle.....	Sept. 20, 1898	53	2,047 76
26 G. Theodule Hamelin.....	Sept. 20, 1898	42	2,556 87
27 Anthyme Perreault.....	May 1, 1900	47	2,289 07
28 Joseph N. Raymond.....	Oct. 4, 1900	46	2,292 16
29 J. Henri Bourassa.....	April 16, 1901	38	2,433 25
30 F. A. Paquin.....	June 13, 1902	43	1,762 86
31 J. Melville Labranche.....	June 13, 1902	41	2,102 70
32 Damien Paquet.....	Feb. 4, 1903	42	1,702 19
33 J. Arthur Gariépy.....	April 20, 1903	37	2,317 75
34 Albert Gagnon.....	Nov. 30, 1903	41	2,039 50
35 J. Oswald Frenette.....	Mar. 26, 1906	40	2,062 97
36 Chas. B. Hamelin.....	June 8, 1906	35	1,870 88
37 Tancrede Perron.....	Dec. 1, 1906	38	1,895 06
38 J. Delavoie Frenette.....	April 1, 1907	38	1,971 14
39 Fortunat Hamelin.....	April 20, 1907	37	2,965 29
40 J. Cyriac Gauthier.....	July 3, 1907	36	2,013 74
41 J. B. Angers.....	July 7, 1908	35	1,997 69
42 David J. Perreault.....	Jan. 15, 1909	36	1,881 98
43 Napoleon Lachance.....	June 4, 1909	32	1,778 11
44 Henri Bouillé.....	June 30, 1909	31	1,848 41
45 Theode Perron.....	Aug. 1, 1909	34	3,062 73
46 Bona Dussault.....	May 2, 1910	34	1,016 10
47 J. Arthur Arcand.....	Aug. 2, 1910	33	2,237 94
48 F. X. Rivard.....	April 10, 1911	35	1,551 42
49 Joseph A. Mayrand.....	Sept. 16, 1913	33	1,942 65
50 Jules Brière.....	Nov. 4, 1914	29	2,326 25
51 Napoleon de Villers.....	Nov. 22, 1915	30	105 96
			\$104,007 46
Gross earnings.....			\$ cts.
Amount paid to pension fund.....			109,306 74
Net earnings.....			5,299 28
			104,007 46

PILOTAGE DISTRICT OF MONTREAL—Continued.

Apprentice Pilots.	Date of Appointment.	Age.
1 Napoleon de Villers, branched Nov. 22, 1915.....	Dec. 30, 1903	30
2 Achille Gosselin.....	Dec. 30, 1903	30
3 Armand Marchand	Dec. 30, 1903	29
4 Donat Paquette.....	Dec. 30, 1903	31
5 Edmond Lacroix.....	Dec. 30, 1903	30
6 Thomas Houde.....	Dec. 30, 1903	29
7 Cyprien Marchand.....	Dec. 30, 1903	29
8 Emilien Naud.....	Dec. 30, 1903	29
9 Joseph Origene Perreault.....	Nov. 1, 1906	29
10 Oscar Perron.....	May 15, 1907	28
11 Jos. Edmond de Villers.....	June 15, 1907	28
12 Francois Beaudry.....	May 5, 1908	25
13 Horace Leveille.....	May 5, 1908	24
14 Andre Gauthier.....	Sept. 17, 1908	23
15 Arthur de Villers.....	May 10, 1909	24
16 C. Auguste de Lachevrotiere.....	Aug. 31, 1909	25
17 Alphonse Halle.....	Oct. 14, 1909	22

(The first four are the selected apprentices.)

Ships piloted.	Number.
Sea-going vessels.	748
Lake steamers...	394
Schooners	21
Tugs and yachts.	5
	1,168

Total registered tonnage of these vessels 2,619,108

DECAYED PILOTS' FUND.

Five per cent is deducted from the pilot's earnings in the Montreal District for the Montreal Decayed Pilots' Fund. This fund is administered by the Dominion Government and disbursed by the Department of Finance.

SESSIONAL PAPER No. 21

PILOTAGE DISTRICT OF MONTREAL—Continued.

Pensioners, for the Calendar year, 1915.		Receives per annum.
		\$ cts.
1	Widow Alexis Gauthier.....	128 00
2	" Octave J. Hamelin.....	149 32
3	" David Mathieu.....	128 00
4	" Edouard Naud.....	128 00
5	" Jean Nault.....	128 00
6	" Elzéar Bellisle.....	149 32
7	" Zephirin Bouillé.....	149 32
8	" Cyrille Bellisle.....	117 32
9	" Joseph Pleau.....	149 32
10	" Nestor Arcand.....	149 32
11	" Alfred Frénette.....	149 32
12	" C. Lyderic Bouillé.....	128 00
13	" C. Joseph Dussault.....	149 32
14	" Celestin Brunet.....	149 32
15	" L. A. Bouillé.....	149 32
16	" Joseph Chandonnet.....	149 32
17	" Onesime Naud.....	149 32
18	" Georges Dufresne.....	149 32
19	Retired Pilot Jean Arcand.....	300 00
20	" Philippe Bélanger.....	300 00
1	" Louis Mayrand.....	300 00
22	" Augustin Naud.....	300 00
23	" Liboire Perreault.....	300 00
24	" Gédéon Groleau.....	300 00
25	" Alfred St. Amant.....	300 00
26	" Néré Bellisle.....	300 00
27	" Narcisse Perreault.....	300 00
28	" Ulric Groleau.....	300 00
29	" Prudent Beaudet.....	300 00
30	" S. C. Auger.....	300 00

No. 21—Retired pilot, Louis Mayrand, died on the 14th April, 1915, pension \$300 per annum ceased on the 31st April, 1915. Then pension at the rate of \$128 per annum continued payable to his widow.

No. 22—Retired pilot, Augustin Naud, died on the 24th December, 1914. Yearly pension of \$300 per annum ceased on the 31st January, 1915.

PILOTAGE RATES.

From the Harbour of Quebec to Portneuf and the opposite side of the River St. Lawrence, or below Portneuf, and above the harbour of Quebec.

For the pilotage of any vessel in tow or propelled by steam (except as hereinafter mentioned), for each foot of draught of water:—

Upwards..... \$0 50
Downwards..... 0 50

For the pilotage of any inland or coasting vessel propelled by steam, for each foot of draught of water:—

Upwards..... \$0 62½
Downwards..... 0 62½

For the pilotage of any-seagoing vessel propelled by steam, for each foot of draught of water:—

Upwards..... \$0 75
Downwards..... 0 75

For the pilotage of any vessel under sail, for each foot of draught of water:—

Upwards..... \$1 05
Downwards..... 0 70

From the harbour of Quebec to Three Rivers and the opposite side of the river St. Lawrence or any place above Portneuf and below Three Rivers.

For the pilotage of any vessel in tow, or propelled by steam (except as hereinafter mentioned), for each foot of draught of water:—

Upwards..... \$1 50
Downwards..... 1 50

For the pilotage of any inland or coasting vessel propelled by steam, for each foot of draught of water:—

Upwards..... \$1 75
Downwards..... 1 75

For the pilotage of any sea-going vessel propelled by steam, for each foot of draught of water:—

Upwards..... \$2 10
Downwards..... 2 10

PILOTAGE DISTRICT OF MONTREAL—*Concluded.*

For the pilotage of any vessel under sail, for each foot of draught of water:—	
Upwards.....	\$2 60
Downwards.....	1 90
From the harbour of Quebec to Sorel and the opposite side of the river St. Lawrence, or any place above Three Rivers and below Sorel.	
For the pilotage of any vessel in tow, or propelled by steam (except as hereinafter mentioned), for each foot of draught of water:—	
Upwards.....	\$1 50
Downwards.....	1 50
For the pilotage of any inland or coasting vessel propelled by steam, for each foot of draught of water:—	
Upwards.....	\$ 1 87
Downwards.....	1 87
For the pilotage of any sea-going vessel propelled by steam for each foot of draught of water:—	
Upwards.....	\$2 25
Downwards.....	2 25
For the pilotage of any vessel under sail, for each foot of draught of water:—	
Upwards.....	\$3 15
Downwards.....	2 10
From the harbour of Quebec to the harbour of Montreal, or to any place above Sorel, and below the harbour of Montreal.	
For the pilotage of any vessel in tow, or propelled by steam (except as hereinafter mentioned), for each foot of draught water:—	
Upwards.....	\$2 00
Downwards.....	2 00
For the pilotage of any inland or coasting vessel propelled by steam, for each foot of draught of water:—	
Upwards.....	\$ 2 50
Downwards.....	2 50
For the pilotage of any sea-going vessel propelled by steam, for each foot of draught of water:—	
Upwards.....	\$3 00
Downwards.....	3 00
For the pilotage of any vessels under sail, for each foot of draught of water:—	
Upwards.....	\$4 20
Downwards.....	2 80
From the harbour of Montreal to Sorel or to any place above Sorel, and from Sorel or any place above Sorel to the harbour of Montreal.	
For the pilotage of any inland or coasting vessel propelled by steam, for each foot of draught of water:—	
Upwards.....	\$1 00
Downwards.....	1 00
For the pilotage of any sea-going vessel propelled by steam, for each foot of draught of water:—	
Upwards.....	\$1 20
Downwards.....	1 20

MINIMUM TARIFF.

For the pilotage of any vessel subject to pilotage between the harbour of Montreal and the harbour of Quebec and vice versa, a minimum fee shall be charged of.....	\$20 00
For the removal of any vessel from one wharf to another within the limits of the harbour, or from any of the wharves into the Lachine canal, or out of the said canal to any wharves in the harbour, for each such service.....	\$5 00

The payment of pilotage dues is compulsory in the pilotage district of Montreal.

SESSIONAL PAPER No. 21

PILOTAGE DISTRICT OF QUEBEC.

(The Minister of Marine and Fisheries is the Pilotage Authority.)

Pilots.	Date of Appointment.	Age.	Net Earnings.
			\$ cts.
1 Pierre Pepin, resigned Oct. 4, 1915.....	Oct. 6, 1870	66	74 52
2 Isiode Noel.....	Oct. 14, 1870	64	1,809 50
3 Narcisse Lavoie.....	Nov. 11, 1875	66	1,928 62
4 Louis A. Royer...resigned Aug. 8, 1915.....	May 2, 1876	69	769 64
5 Onesime Noel.....	May 3, 1876	62	2,365 51
6 F. X. Demeules.....	Aug. 9, 1876	63	1,602 05
7 L. H. Lapierre.....	Nov. 22, 1876	65	1,652 66
8 J. E. Lachance.....	Feb. 15, 1877	60	1,726 15
9 J. T. St. Laurent.....	June 20, 1877	63	1,830 76
10 J. V. Gourdeau.....	July 11, 1877	67	1,956 43
11 L. T. Delisle, resigned Dec. 16, 1915.....	Oct. 10, 1877	61	1,478 30
12 Adjutor Baillargeon.....	April 17, 1878	61	1,662 56
13 Sam Rioux (on suspension).....	May 8, 1878	62	
14 Paul B. Lachance.....	April 23, 1879	59	1,804 06
15 Arcadius Jouvin.....	Oct. 11, 1879	56	2,152 64
16 Paul X. Lachance.....	Oct. 22, 1879	59	3,001 50
17 Joseph Pouliot.....	Oct. 22, 1879	58	1,690 10
18 Adjutor Lachance.....	Nov. 12, 1879	56	2,082 80
19 Frs. Gaudreau.....	Mar. 23, 1881	64	2,102 10
20 Arthur Koenig.....	Mar. 23, 1881	64	1,793 32
21 Eugene Anctil.....	Mar. 23, 1881	57	1,689 34
22 David Dumas (on suspension part of season).....	Mar. 23, 1881	62	1,664 65
23 Jos. O. Lachance.....	Mar. 23, 1881	61	1,692 50
24 Elzear Normand.....	Oct. 19, 1881	56	1,679 91
25 J. Bte. Bernier.....	Oct. 19, 1881	57	2,917 31
26 Joseph Paquet (on suspension part of season).....	Dec. 7, 1881	54	1,677 38
27 J. A. Lachance.....	May 25, 1882	54	1,480 89
28 Arthur Baillargeon.....	Oct. 11, 1882	58	3,244 93
29 Joseph Vezina.....	Nov. 29, 1882	56	1,645 97
30 John A. Irwine.....	May 30, 1883	59	1,810 50
31 Frederic Bouffard.....	Aug. 2, 1883	58	1,756 59
32 Jules Asselin.....	Aug. 2, 1883	53	2,333 68
33 Lucien Lachance (on suspension part of season).....	Apr. 12, 1884	53	730 83
34 Camille Bernier.....	July 16, 1884	57	2,154 15
35 Moise Blouin.....	July 16, 1884	64	1,716 92
36 Alfred Gaudreau.....	July 16, 1884	62	1,339 68
37 Alfred Raymond (license cancelled).....	July 16, 1884	54	1,453 78
38 Phileas Lachance.....	July 16, 1884	57	2,787 35
39 Joseph H. Talbot.....	July 27, 1887	55	2,059 17
40 Moise Arthur Lachance.....	Feb. 13, 1888	51	1,985 87
41 Louis Frs. Thivierge.....	May 29, 1888	50	2,878 57
42 Alphonse Paquet.....	July 24, 1888	49	2,052 94
43 Adelard Bernier.....	Sept. 17, 1888	54	4,263 23
44 J. Bte. Pouliot.....	Aug. 16, 1890	47	2,866 52
45 Geo. Lachance.....	Feb. 27, 1900	44	1,732 57
46 Eudore Langlois.....	Mar. 28, 1900	52	1,525 96
47 Joseph Delisle.....	July 20, 1904	42	2,773 29
48 Jules Lachance.....	July 20, 1904	34	2,130 77
49 Auguste Senterre.....	July 20, 1904	32	3,087 18
50 Arthur Larochelle.....	July 20, 1904	35	2,882 45
51 Raoul Lachance.....	July 20, 1904	34	3,800 56
52 Wilhelm Langlois.....	July 20, 1904	36	2,362 91
53 Ernest Bernier.....	July 20, 1904	40	2,516 71
54 Arthur Baquet (on military duty).....	July 20, 1904	33	
55 Jules Lamarre (on suspension part of season).....	July 20, 1904	32	472 92
56 Georges Larochelle.....	July 20, 1904	37	1,887 71
57 Adelard Delisle.....	July 20, 1904	36	3,117 64
58 Alexandre Larochelle.....	Aug. 29, 1904	32	2,918 53
59 Arthur Paquet.....	May 22, 1905	39	1,762 07
60 J. Adelard Bernier.....	May 21, 1915	28	1,744 89
61 Bastien Anctil.....	May 21, 1915	26	1,697 86
62 Gabriel Lachance.....	May 21, 1915	24	1,577 36
63 Chs. H. Koenig.....	June 2, 1915	25	1,344 08
64 Ernest Pouliot.....	Sept. 9, 1915	23	979 39
			123,629 38

7 GEORGE V, A. 1917

PILOTAGE DISTRICT OF QUEBEC—Continued.

Gross earnings.....	\$132,806 59
Amount paid to Pension Fund.....	9,177 21
Net earnings.....	123,629 38

Apprentice Pilots.	Date of Appointment.	Age.
1 L. G. Lavoie.....	April 27, 1909	23
2 Albser Lachance.....	April 27, 1909	25
3 Cyrille Pouliot.....	April 2, 1909	23
4 P. E. Lachance.....	April 26, 1910	22
5 Hern Bouffard.....	April 26, 1910	25
6 Hern Lachance.....	April 26, 1910	23
7 J. G. Gaudreau.....	April 26, 1910	23
8 Cam. Couillard.....	April 1, 1910	23
9 Lact. Lachance.....	May 10, 1911	22
10 J. W. Pouliot.....	Mar. 29, 1911	21
11 L. P. Langlois.....	May 10, 1911	22
12 Rodr. Lachance.....	May 10, 1911	26
13 Edmond Baquet.....	May 3, 1911	21
14 Geo. Labrecque.....	May 3, 1911	22
15 Eud. Langlois.....	May 10, 1911	23
16 Romeo Gaudreau.....	May 10, 1911	26
17 Ed. Koenig.....	Ma 1, 1912	22
18 J. E. Bouffard.....	May 1, 1912	23
19 L. A. Larue.....	Mar. 29, 1912	22
20 Edm. Pouliot.....	Mar. 29, 1912	22
21 L. P. Couillard.....	Mar. 29, 1912	22

SHIPS PILOTED.	Number.
British steamers.....	1,563
British sailing vessels.....	3
American steamers.....	235
American sailing vessels.....	2
Norwegian steamers.....	165
Danish steamers.....	26
	1,988
Total tonnage of these vessels.....	4,928,325

DECAYED PILOTS' FUND.

Seven per cent is deducted from the pilot's earnings in the Quebec District for the Quebec Decayed Pilots' Fund. This Fund is managed and disbursed by the Quebec Pilots' Corporation.

PENSIONERS FOR THE CALENDAR YEAR, 1915.

29 Pilots at \$300.

	\$	cts.
Raymond Baquet.....	300	00
Arbel Bernier.....	300	00
Theophile Carriveau, pension from 1st January, 1915.....	250	00
J. Emilio Couillard, pension from 1st April, 1915.....	175	00
L. R. Demers.....	300	00
Elzear Desrosiers.....	300	00
Joseph G. Dupil.....	300	00
Elzear Godbout.....	300	00
Paul Gobeil.....	300	00
Barthelemi Lachance.....	300	00
Nestor Lachance.....	300	00
Pierre Pepin Lachance, pension from 12th May, 1915.....	140	22
Theodule Lachance.....	300	00
Alfred Larochelle.....	300	00
Edmond Larochelle.....	300	00
Joseph Larochelle.....	300	00
Onesime Larochelle, died 11th July, 1915.....	208	68
Joseph Lapointe.....	300	00

SESSIONAL PAPER No. 21

PILOTAGE DISTRICT OF QUEBEC—*Continued.*29 Pilots at \$300—*Concluded.*

J. Edmond Morin.....	\$ 300 00
Charles Normand.....	300 00
Joseph Plante.....	300 00
Adelme Pouliot.....	300 00
Alphonse Pouliot, pension from 1st April, 1915.....	175 00
Ch. A. Raymond, died 13th January, 1915.....	60 33
Hubert Raymond.....	300 00
Napoleon Rioux.....	300 00
Albert Royer, pension from 8th August, 1915.....	69 33
Trefflé Simard.....	300 00
Victor Vezina.....	300 00
	<hr/>
	\$ 7,678 56

1 Pilot at \$270.

Alphonse Asselin.....	270 00
	<hr/>
	\$ 270 00

7 Pilots at \$216.

Cyrille Audet.....	216 00
Ch. F. Brown.....	216 00
Joseph S. Brown.....	216 00
Nazaire Delisle.....	216 00
Laurent Godbout.....	216 00
Moise Lachance.....	216 00
George Normand.....	216 00
	<hr/>
	\$ 1,512 00

26 Widows at \$116.

Widow J. Evarist Adam.....	116 00
" J. Bte. Bernier.....	116 00
" Ephrem Chamberland.....	16 00
" J. Bte. Couillard, pension from 23rd April, 1915.....	60 27
" Achille Damours.....	116 00
" David Damours.....	116 00
" Victor Demers, died 25th May, 1915.....	58 00
" Francois Dumas, died 23rd January, 1915.....	26 48
" Jeremie Dufresne.....	116 00
" Joseph Fortier.....	116 00
" Antoine Gobeil.....	116 00
" Pierre Gobeil.....	116 00
" Moise Godbout.....	116 00
" Hermenegilde Guenard.....	116 00
" F. X. Lamarre.....	116 00
" Antoine Lapointe.....	116 00
" Paul Langlois.....	116 00
" Onesime Larochelle, pension from 12th July, 1915.....	35 00
" J. E. Bona Lavoie.....	116 00
" Regis Menard.....	116 00
" Joseph Paquet.....	116 00
" J. Bte. Pouliot.....	116 00
" Joseph Pouliot.....	116 00
" Moise Pouliot.....	116 00
" Ch. A. Raymond, pension from 14th January, 1915.....	92 35
" Charles Vezina, 26th February, 1915.....	37 45
	<hr/>
	\$ 2,629 55

8 Widows at \$112.

Widow Antoine Ph. Chouinard.....	112 00
" Nazaire Curodeau.....	112 00
" F. X. Delisle, died 24th February, 1915.....	35 60
" Jean Delisle.....	112 00
" Theophile Gourdeau.....	112 00
" Emile Lachance.....	112 00
" Joseph Lachance.....	112 00
" J. Bte. Patoine.....	112 00
	<hr/>
	\$ 819 60

PILOTAGE DISTRICT OF QUEBEC—Continued.

5 Widows at \$110.

Widow Eustache Doiron	\$ 110 00
“ Georges Despres.	110 00
“ Nicolas Fortin...	110 00
“ Pzul Paquet.....	110 00
“ Adelard Santerre	110 00
	<hr/>
	550 00

4 Widows at \$106.

Widow Jos. F. X. Bernier, died 13th July, 1915.....	74 31
“ Leon Labrecque.....	106 00
“ Phileas Langlois.....	106 00
“ Napoleon Pouilot.....	106 00
	<hr/>
	392 31

4 Widows at \$100.

Widow Alfred Dion.....	100 00
“ Joseph Dion.....	100 00
“ Dennis Glynn.....	100 00
“ Pierre Ross.....	100 00
	<hr/>
	400 00

4 Widows at \$96.

Widow Ovide Lachante.....	96 00
“ Joseph Levesque.....	96 00
“ D. Ferdinand Pelletier	96 00
“ Benjamin Pineau.....	96 00
	<hr/>
	384 00

1 Widow at \$76.

Widow Joseph Thivierge, married 11th January, 1915.....	14 80
	<hr/>
	14 80

1 Widow at \$70.

Widow Cyrille Lapointe	70 00
	<hr/>
	70 00

1 Widow at \$68.

Widow Napoleon Dallaire.	68 00
	<hr/>
	68 00

1 Widow at \$64.

Widow Alfred Turgeon	64 00
	<hr/>
	64 00

9 Children at \$30.

Damase Babin....	30 00
Jean Dugas... ..	30 00
Pierre Descombes	30 00
Isaac Forbes	30 00
Jean Gobeil.....	30 00
Joseph Langlois	30 00
Francois Noel.....	30 00
Joseph Plante.....	30 00
J. Bte. Talbot.	30 00
	<hr/>
	270 00

SESSIONAL PAPER No. 21

PILOTAGE DISTRICT OF QUEBEC—Continued.

QUEBEC PILOTS DRAWING A GOVERNMENT PENSION OF \$300 PER ANNUM.

Ls. R. Demers.....	\$	300 00
Theodule Lachance.....		300 00
Charles Brown.....		300 00
Jos. Lapointe.....		300 00
Nestor Lachance.....		300 00
Paul Gobeoil.....		300 00
Barthelemi Lachance.....		300 00
Alphonse Asselin.....		300 00
Chas. Normand.....		300 00
Napoleon Rioux.....		300 00
Elzear Desrosiers.....		300 00
Hubert Raymond.....		300 00
Arbel Bernier.....		300 00
Laurent Godbout.....		300 00
Adelme Pouilot.....		3 0 00
Edmond Larochelle.....		300 00
L. E. Morin.....		300 00
A. T. Simard.....		300 00
Jos. Plante.....		300 00
Victor Vezina.....		300 00
J. G. Dupil.....		300 00
Raymond Baquet.....		300 00
Alfred Larochelle.....		300 00
Onesime Larochelle, died 11th July, 1915.		158 33
Elzear Godbout.....		300 00
Theophile Corriveau.....		300 00
Alphone Pouliot, pension from 1st July, 1915..		150 00
Emilio Couillard, pension from 1st July, 1915		150 00
Treffe Delisle, pension from 1st October, 1915..		75 00
Pierre Pepin, pension from 1st October, 1915..		75 00
		8, 198 33

TABLE I.—RATES OF PILOTAGE FOR THE HARBOUR OF QUEBEC AND BELOW, FOR EACH FOOT OF DRAUGHT WATER.

From	To	From May 1, to Nov. 10.	From Nov. 10, to Nov. 19.	From Nov. 19, to Mar. 1.	From Mar. 1, to May 1.
Father Point.....	Quebec.....	\$3 87 per ft	4 95 per ft.	\$6 02 per ft.	\$4 41 per ft.
Quebec.....	Father Point	3 40 "	4 46 "	5 54 "	3 93 "
Father Point.....	Chicoutimi.....	3 87 "	4 95 "	6 02 "	4 41 "
Chicoutimi.....	Father Point.....	3 40 "	4 46 "	5 54 "	3 93 "
Quebec	Tadoussac	3 40 "	4 46 "	5 54 "	3 93 "
Tadoussac	Quebec	3 87 "	4 95 "	02 "	4 41 "
Tadoussac	Chico timi	$\frac{2}{3}$ of 3 87 (2.58)	$\frac{2}{3}$ of 4 95 (3.30)	$\frac{2}{3}$ of 6 02 (4.02)	$\frac{2}{3}$ of 4 41 (2.94)
Chicoutimi	Tadoussac	$\frac{2}{3}$ of 3 40 (2.27)	$\frac{2}{3}$ of 4 46 (2.98)	$\frac{2}{3}$ of 5 54 (3.70)	$\frac{2}{3}$ of 3 93 (2.66)
Father Point or any place below the anchorage of Brandy Pots off Hare island.	Anchorage or mooring ground in the basin or harbour of Quebec.	3 87 per ft	4 95 per ft.	6 02 per ft.	4 41 per ft.
The anchorage ground at the Brandy Pots off Hare island or any place above the said anchorage ground and below St. Roch point	" "	$\frac{2}{3}$ of 3 87 (2.58)	$\frac{2}{3}$ of 4 95(3 3.0)	$\frac{2}{3}$ of 6 02 (4.02)	$\frac{2}{3}$ of 4 41 (2.94)

7 GEORGE V, A. 1917

PILOTAGE DISTRICT OF QUEBEC—*Concluded.*

TABLE I.—RATES OF PILOTAGE FOR THE HARBOUR OF QUEBEC AND BELOW FOR EACH FOOT OF DRAUGHT WATER.

From	To	From May 1, to Nov. 10.	From Nov 19, to Nov. 10.	From Nov. 19, to Mar. 1.	From Mar. 1, to May 1.
St. Roch pt. or any place above this point and below the Pointe-aux-Pins or Crane island.	Anchorage or mooring ground in the basin or harbour of Quebec.	$\frac{1}{3}$ of 3 87 (1.29)	$\frac{1}{3}$ of 4 95 (1.65)	$\frac{1}{3}$ of 6 02 (2.01)	$\frac{1}{3}$ of 4 41 (1.47)
Pointe-aux-Pins or Crane island or any place below St. Patrick hole.	" "	$\frac{1}{4}$ of 3 87 (0.97)	$\frac{1}{4}$ of 4 95 (1.24)	$\frac{1}{4}$ of 6 02 (1.50)	$\frac{1}{4}$ of 4 41 (1.10)
The Anchorage or mooring ground in the basin or harbour of Quebec.	Father Point or the place where the pilot shall be discharged in the river below Quebec.	3 40	4 46	5 54	3 93

TABLE II.—RATES OF PILOTAGE FOR THE HARBOUR OF QUEBEC AND BELOW.

From	To
Any wharf in the harbour of Quebec between Pointe a Carey, below, and the west end of the Allan's wharf above, both inclusive.....	Any other wharf within said limits....\$ 2 50
Any place in the harbour of Quebec not being a wharf within the above mentioned limits.....	Any other place in the said harbour not being a wharf within the said limits. 5 00

N.B.—Pilots taking charge of vessels at St. Patrick hole or above it, shall be entitled to no more than the sum allowed in Table II for piloting vessels from one part of the harbour to another.

The payment of pilotage dues is compulsory in the pilotage district of Quebec, P.Q.

P. L. LACHANCE.
Acting Superintendent of Insurance.

SESSIONAL PAPER No. 21

PILOTAGE DISTRICT OF VANCOUVER, B.C.

Pilot Commissioners.	Date of Appointment.
C. J. Major, Chairman	May 14, 1879
Frank Burnett.....	July 20, 1898
F. W. Evans	Mar. 24, 1912
H. G. Ross	Mar. 24, 1912
W. Harvey Copp.	Mar. 6, 1915

Pilots.	Date of Appointment.	Age.	Gross Earnings.	Amount paid to each.
			\$ cts.	\$ cts.
1 W. Ettershank.	June 18, 1888	73	39,585 66	3,495 67
2 H. Robson Jones.	July 1, 1892	60		3,495 67
3 G. W. Robarts....	Oct. 1, 1907	43		3,495 66
4 R. A. Batchelor	May 15, 1910	44		3,495 65
5 A. C. Anderson....	Oct. 16, 1911	47		3,495 64
6 A. Christensen.	Feb. 1, 1912	41		3,495 65
7 B. L. Johnson.....	Jan. 29, 1913	37		2,136 53
			\$ 39,585 66	\$ 23,110 47

Pilot Boats.	Cost of Maintenance
Pilot No. 1 (Gas)	
C.G.J. (Gas).....	\$6,001 21

Vessels which paid pilotage dues.	Number.	Tonnage.	Amount paid.
		\$ cts.	\$ cts.
British steam vessels.....	223	859,995	16,058 29
British sailing vessels....	24	50,232	1,300 32
Foreign steam vessels.....	575	937,416	21,516 95
Foreign sailing vessels.....	28	25,860	710 10
	850	1,873,503	39,585 66

RECEIPTS AND EXPENDITURE.

	Receipts.	Expendi- ture.
	\$ cts.	\$ cts.
Balance in bank, January 1, 1915	2,734 68	
Pilotage earnings, 1915.....	39,585 66	
Paid pilots, January 5, 1915		2,734 68
Paid pilots year 1915.....		23,110 47
Office expense account, 1915.....		1,572 25
Pilot boat and station expense account, 1915.....		6,001 21
Pilots' expenses, 1915.....		6,515 42
Balance in bank		2,386 31
	42,320 34	42,320 :

PILOTAGE DISTRICT OF VANCOUVER, B.C—*Concluded.*

Pilotage Rates.

For vessels entering into or clearing from the ports of Vancouver, Howe Sound and Powell River the rates of Pilotage shall be as follows:—

(a) For vessels under sail \$2 per foot draught of water and one cent per net registered ton.

(b) For vessels in tow of a steamer, \$1 per foot draught of water and one cent per net registered ton.

(c) For steamers, \$1 per foot draught of water, and one cent per net registered ton, and \$1 (one dollar) per foot draught from the Vancouver Pilotage limits to the Powell River Pilotage limits (provided that vessels calling at English Bay, bound for Howe Sound or Powell River shall not be liable for inward pilotage for port of Vancouver).

Any portion of a foot not exceeding six inches shall be paid as half a foot; any fraction exceeding six inches shall be paid for as one foot.

The Pilotage from Cape Flattery or Royal Roads to a line drawn from Point Atkinson to the Nun buoy on Spanish bank, or the limits of Howe Sound as hereinbefore described, and vice versa, is not compulsory, but if the services of a pilot are required he shall be paid the following rates, viz.:—

	Per foot.
From Cape Flattery.....	\$6 00
From Callum Bay.....	5 00
From Beachy Head.....	4 00
From Race Rocks or Royal Roads.....	3 00

And for vessels under steam or in tow of a steamer the following rates shall be paid:—

	Per foot.
From Cape Flattery.....	\$3 00
From Callum Bay.....	2 50
From Beachy Head.....	2 00
From Race Rocks or Royal Roads, vessels under steam.....	1 00
From Race Rocks or Royal Roads, vessels in tow of a steamer.....	1 50

(d) Point Atkinson pilot station to be the boarding or speaking point for all ports in existence, or to be made on the mainland up to the 51st parallel of north latitude, until otherwise ordered by the pilotage authority.

The payment of pilotage dues is compulsory in the pilotage district of Vancouver.

C. G. MAJOR,
Chairman.

C. GARDNER JOHNSON,
Secretary.

SESSIONAL PAPER No. 21

PILOTAGE DISTRICT OF VICTORIA AND ESQUIMALT, B.C.

Pilot Commissioners.				Date of Appointment.
H. G. Wilson..				1912
W. J. Stephens. . .				1912
G. A. Kirk....				1912
J. R. Saunders. . . .				1913
Geo. Okell.				1913

Pilots.	Date of	Age.	Earnings.	Amount paid to each.
			\$ cts.	\$ cts.
1 John Newby.....	1891	67	4,167 96	3,751 21
2 William Cox.....	1903	60	4,066 12	3,659 57
3 Charles Israel Harris.....	1910	48	4,392 42	3,953 21
4 William H. Whiteley.....	1911	53	4,185 00	3,766 54
			16,811 50	15,130 53

Pilot Boats.	Cost of Maintenance.
Colby No. 1.....	\$4,136 75
Colby No. 2.....	

Vessels which paid pilotage dues.	Number.	Tonnage.	Amount paid.
			\$ cts.
British steam vessels.....	180	714,940	7,584 20
Foreign steam vessels.....	306	759,848	8,951 29
Foreign sailing vessels.....	6	7,266	276 01
	492	1,482,054	16,811 50

RECEIPTS AND EXPENDITURE.

	Receipts.	Expenditure.
	\$ cts.	\$ cts.
From British ships	7,584 20	
From Foreign ships.....	9,227 30	
Surplus, 1914.....	1,567 39	
Licenses.....	350 00	
Pilots' drawings, surplus, 1914		1,567 39
Pilots' drawings, 1915		15,130 53
Secretary's salary.....		600 00
Rent ..		420 00
Printing ..		25 25
Miscellaneous expense ..		60 00
Exchange		7 20
Surplus ..		918 52
	\$ 18,728 89	\$ 18,728 89

7 GEORGE V, A. 1917

PILOTAGE DISTRICT OF VICTORIA AND ESQUIMALT, B.C.—*Continued.**Pilotage Rates.*

(a) Vessels bound to other ports and coming to an anchor in Royal Roads, the pilotage shall be free, except the services of a pilot are employed, when pilotage according to the following graduated scale shall be payable:—

From inside or North of Race rocks to Royal bay or vice versa, 50 per cent of the prescribed rates under Clause (b).

	Per foot.
From Beechy Head to Royal Roads or vice versa.....	\$1 00
From Pillar Point to Royal Roads or vice versa.....	3 00.
From Cape Flattery to Royal roads or vice versa	6 00

(b) For vessels entering into or clearing from the ports of Victoria and Esquimalt, the rates of pilotage shall be as follows:—

(1) For regular ocean steamers, 50 cents per foot draught of water and $\frac{1}{2}$ cent per net registered ton up to a maximum of 3,500 tons on the inward voyage subject to a discount of 20 per cent, and 50 per cent of the above rates on the outward voyage.

(a) Regular ocean steamers are those which have in their printed schedule Victoria or Esquimalt as a regular port of call, and call both inwards and outwards.

(b) Any regular vessel calling inwards and not outwards, or vice versa, will not be entitled to the 20 per cent discount.

(2) For irregular ocean steamers, \$1 per foot draught of water and $\frac{3}{4}$ per cent net registered ton.

(3) For regular steamers in the coasting trade between San Francisco and Lynn canal inclusive, the rate shall be the same as for regular ocean steamers, as rated in Clause 1.

(4) For vessels under sail, \$2 per foot draught of water and 1 cent per net registered ton.

(5) For sailing vessels in tow, \$1.50 per foot draught of water and 1 cent per net registered ton.

(6) For all vessels entering into or clearing from William's Head quarantine station, the rates shall be 50 per cent of the prescribed rates of any class of vessel for Victoria and Esquimalt, subject to exemptions in Sec. 17, Clause 7; provided, however, that all coasters between San Francisco and Lynn canal inclusive, when compelled by special instructions from the Dominion Government, to call at William Head quarantine station, shall be exempt from pilotage dues unless the services of a pilot are requested.

(7) For all vessels of 500 tons and under, 75 cents per foot draught of water.

(c) *Gulf Pilotage.*—For all vessels from the limits of the Ports of Victoria and Esquimalt to the limits of all ports on Puget sound and gulf of Georgia and vice versa, the rate of pilotage shall be \$1 per foot draught of water.

(d) Vessels proceeding from Victoria to Esquimalt, and vice versa, and having discharged or received a portion of their cargo in either harbour, and having paid full pilotage into either harbour, if proceeding with the assistance of steam shall pay \$1 per foot.

(e) Any fraction of a foot not exceeding six inches shall be paid for as half a foot, and any fraction of a foot exceeding six inches shall be paid for as a foot.

(f) Pilots shall, when called upon to do so, remove vessels from one part of either harbour to another part of the same harbour for the specific charge of \$10 for each and every removal.

(g) The Pilotage Authority, subject to the approval of the Governor in Council, shall have power under this By-law, to make such arrangements from time to time concerning the pilotage of vessels making regular trips between Victoria and Puget Sound, as to them may appear necessary or expedient in the interests of trade and commerce.

(h) Compulsory payment of pilotage dues is not chargeable against vessels while in Royal roads, unless such vessels shall enter either or both the harbours of Victoria and Esquimalt.

(i) When a vessel is bound to or from any other port in the province, either laden or in ballast, and does not discharge or receive any cargo, passengers or mails, but simply enters it as harbour of refuge, such vessel shall be exempt from pilotage in and out of Esquimalt, excepting in cases where a pilot is actually engaged by the master for such services.

SESSIONAL PAPER No. 21

PILOTAGE DISTRICTS OF VICTORIA AND ESQUIMALT, B.C.—*Concluded.*

(j) Steamers making regular trips to Victoria and Esquimalt and having paid the prescribed rates under Clause (b) on the inward voyage and returning again to either of said harbours within a period of twenty days, shall only pay one-half the inward rates.

The payment of pilotage dues is compulsory in the pilotage district of Victoria and Esquimalt, B.C.

JOSHUA KINGHAM,
Secretary-Treasurer.

PILOTAGE DISTRICT OF NANIAMO, B.C.

Pilot Commissioners.	Date of Appointment.
J. S. Knarston	May, 1900
T. Boyce.....	May, 1900
I. E. Lowe	April, 1912
Wm. Bennett..	June, 1912
Jas. Pender..	May, 1915

Pilots.	Date of Appointment	Age.	Earnings.	Amount paid to each.
			\$ cts.	\$ cts.
1 J. Christensen..	Feb., 1891	74	2,647 64	2,551 26
2 J. E. Butler.....	Mar., 1894	54	3,878 60	2,866 08
3 W. D. Owen.....	Oct., 1898...	19	3,501 54	2,866 08
4 A. F. Yates.....	Sept., 1900..	60	4,158 43	2,866 08
5 J. Gasse	Aug., 1903..	51	3,812 70	2,866 08
6 J. C. Foote.....	April, 1907..	55	3,506 58	2,866 08
7 J. W. Butler.....	Oct., 1907...	45	3,399 15	2,866 08
			24,884 53	19,747 74

Pilot Boats.	Cost of Maintenance.
One in Victoria.....	\$ cts. 830 06

Vessels which paid pilotage dues.	Number.	Tonnage.	Amount paid.
			\$ cts.
British steam vessels.....	144	362,185	12,854 96
Small tugs, scows, etc.....			1,803 91
Foreign steam vessels..	247	284,457	12,948 88
Foreign-sailing vessels and barges.....	20	44,662	648 75
	411	691,304	28,256 50

PILOTAGE DISTRICT OF NANAIMO, B.C.—Continued.

RECEIPTS AND EXPENDITURE.

	Receipts.	Expendi- ture.
	\$ cts.	\$ cts.
British vessels.....	12,854 96	
Small tugs, scows, etc.....	1,803 91	
Foreign steamers, barges	12,948 88	
Barges, and sailers.....	648 75	
Victoria Station—		
Telephones, telegrams		303 97
Wages.....		464 00
Expense to pilot boat.		366 06
Miscellaneous.....		38 75
Nanaimo Station—		
Telephones, telegrams..		133 89
Boat and baggage hire.....		567 25
Patriotic Fund.....		420 00
Bank Exchange.....		17 10
Miscellaneous.....		7 00
Nanaimo office expenses—		
Rent		264 05
Salaries		505 00
Insurance		12 30
Telephones.....		42 00
Light.....		17 35
Auditor		20 00
Postage stamps, stationery.		43 85
Travelling expenses.....		47 00
Commission on collections		315 62
Pilots' travelling expenses..		4,440 00
Cash paid to pilots.....		19,747 74
Cash on hand.....		483 56
	28,256 50	28,256 50

Pilotage Rates.

The rates for all vessels entering into or clearing from any port within the pilotage district of Nanaimo both outward and inward, shall be as follows:—

(a) For vessels under sail, \$2 per foot draught of water and one cent per net registered ton.

(b) For vessels in tow of a steamer, \$1 per foot draught of water, and one cent per net registered ton.

(c) For steamers, \$1 per foot draught of water, and one cent per net registered ton.

Any portion of a foot not exceeding six inches shall be paid as half a foot, any fraction exceeding six inches shall be paid for as one foot.

Gulf of Georgia and Straits Navigation.

Vessels accepting the services of a duly licensed pilot in the straits of Juan de Fuca, Hare straits or gulf of Georgia, and bound to any ports or harbours within the jurisdiction of the Pilotage Authority of Nanaimo, shall pay for such service both inward and outward the sum of \$10 per day or fraction of a day of 24 hours, in addition to the regular port pilotage.

SESSIONAL PAPER No. 21

PILOTAGE DISTRICT OF NANAIMO, B.C.—*Concluded.*

Any vessel arriving at any port within the pilotage district of Nanaimo, without having been spoken inwards by a pilot shall not be exempt from paying outward pilotage, and masters of vessels requiring a pilot outwards, must make application to the Pilotage Authority or their agents who shall supply him with the first available pilot who may be disengaged.

The payment of pilotage dues is compulsory in the pilotage district of Nanaimo, B.C.

E. G. CAVALSKY,
Secretary.

PILOTAGE DISTRICT OF NEW WESTMINSTER, B.C.

Pilot Commissioners.		Date of Appointment.	
Geo. S. Blakeley		Jan. 9, 1914...	
Alfred E. White		Jan. 9, 1914.	
Fredk. J. Coulthan		Jan. 9, 1914	

Pilot.	Date of Appointment.	Age.	Amount paid per month.
L. H. Ford.....	Oct. 15, 1915.	58	\$ cts. 150 00

Ships Piloted.	Number.	Tonnage.	Amount paid.
			\$ cts.
British steam vessels	17	17,013	629 26
Foreign steam vessels	110	7,599	774 02
	127	24,612	1,403 28

Receipts and Expenditure.

The receipts of the district not being sufficient to support a pilot, the City of New Westminster pays the pilot's salary of \$150 per month.

Ninety per cent of all receipts is paid to the city of New Westminster, and 10 per cent retained for pilot's and office expenses.

Pilotage Rates.

For vessels entering into or clearing from the port of New Westminster the rate of pilotage shall be as follows:—

From the light-ship on the Fraser sand-heads to New Westminster:—

(a) For vessels under sail \$2 per foot draught of water and one cent per net registered ton.

7 GEORGE V, A. 1917

PILOTAGE DISTRICT OF NEW WESTMINSTER, B.C.—*Concluded.*

(b) For vessels in tow of a steamer \$1 per foot draught and one cent per net registered ton.

(c) For steamers \$1 per foot draught of water and one cent per net registered ton.

And fraction of a foot not exceeding six inches shall be paid for as half a foot, and any fraction of a foot exceeding six inches shall be paid for as a foot.

The payment of pilotage dues is compulsory in the pilotage district of New Westminster, B.C.

D. H. MACGORRAN,
Secretary.

PILOTAGE DISTRICT OF HALIFAX, N.S.

Pilot Commissioners.		Date of Appointment.
M. C. Grant		June, 1892
J. J. Bremner		May, 1883
J. E. Dewolf.		May, 1908
Neil Hall..		Nov., 1908
James Hall		July, 1904
F. G. Rudolf		Oct., 1909
Peter F. Martin		Nov., 1915

Pilots.		Amount paid to Pilots.
		\$ cts.
Boat No. 1, <i>America</i> —		
1 Frank Thomas		
2 William Hayes.....		
3 Wallace Brackett		
4 John Holland		
5 William Gorman...		18,553 51
6 Chas. F. Martin....		
7 Thomas Reyno		
8 Henry Latter		
9 Cyril Hanrahan....		
10 William Latter.....		
Boat No. 2, <i>Columba</i> —		
11 Jas. G. Renner...		
12 Lamont Power.....		
13 Lawrence Hayes.		
14 Edward Renner....		
15 James Spears.....		21,008 14
16 Thomas Hayes		
17 Frank Mackey.		
18 John Brown....		
19 Walter White.....		
		39,561 65

SESSIONAL PAPER No. 21

PILOTAGE DISTRICT OF HALIFAX, N.S.—Continued.

Apprentices.	Amount paid to Apprentices.
	\$ cts.
1 Frank Reno..	
2 E. L. DeLouretrey	87 00
3 James Dempsey....	
4 John Brackett.....	
	87 00

Vessels which paid Pilotage dues.	Number.	Tonnage.	Amount paid.
			\$ cts.
British steam vessels	10,015	1,503,721	31 985 80
British sailing vessels.	687	133,719	4,574 30
Foreign steam vessels.	43	54 142	1,616 80
Foreign sailing vessels	158	82,455	5 30 00
	10,913	1,774,037	42,057 40

	\$ cts.
PENSION FUND	
Dominion Savings Bank.....	9,807 21
Dominion of Canada stock	9,212 36
Deposit receipts	18,114 75
Dominion of Canada war Loan	3,250 00
Royal Bank of Canada.....	444 56
	40,828 68

RECEIPTS AND EXPENDITURE.

	Receipts.	Expenditure.
	\$ cts.	\$ cts.
January 1st; balance.	763 41	
Pilotage fees.....	41,346 75	
Out pilotage.....	1,351 35	
Commissions.....	315 40	
Paid pilots		39,561 65
Superannuation.....		1,378 42
Expense.....		900 53
Apprentices.....		173 00
Secretary		999 96
Balance, Dec. 31, 1915		703 41
	43,776 97	43,776 97

7 GEORGE V, A. 1917

PILOTAGE DISTRICT OF HALIFAX, N.S.—*Concluded.*

PILOTAGE RATES.

	Inward.	Outward.
	\$ cts.	\$ cts.
Canadian vessels of 120 tons and under.....	Free.	Free.
Vessels under 200 tons.....	9 60	6 00
Vessels of 200 tons to 300 tons.....	13 20	8 40
“ 300 “ 400 “	16 80	10 80
“ 400 “ 500 “	19 20	12 00
“ 500 “ 600 “	21 60	13 20

Vessels of 600 tons and over, sixty cents for every 100 tons additional or fractional part thereof *inward* and thirty cents *outward*.

Outward pilotage for all vessels of 200 tons and upwards compulsory.

The payment of pilotage dues is compulsory in the pilotage district of Halifax, N.S.

J. W. CRICHTON,
Secretary.

PILOTAGE DISTRICT OF SYDNEY, N.S.

Pilot Commissioners.	Date of Appointment.
Thomas Desmond	1912
F. C. Kimber	1912
R. T. J. Vooght	1912
C. P. Livingston.....	1914
P. H. Worgan	1915

SESSIONAL PAPER No. 21

PILOTAGE DISTRICT OF SYDNEY, N.S.—Continued.

Pilots.	Earnings.	Amount paid to each.
	\$ cts	\$ cts.
1 Yorke Barrington.....	1,330 10	1,330 10
2 Joseph Brown.....	1,268 97	1,268 97
3 Thomas Burke.....	1,268 97	1,268 97
4 John Cann....	1,268 97	1,268 97
5 E. D. Cann.....	1,330 10	1,330 10
6 Jas. H. Carroll	1,203 98	1,203 98
7 John Carroll.....	1,203 98	1,203 98
8 Lewis Carroll.....	1,268 97	1,268 97
9 J. Connell.....	1,268 97	1,268 97
10 Geo. Fraser	1,268 97	1,268 97
11 Wm. Langille	1,268 97	1,268 97
12 Jas. McGillvary.....	1,268 97	1,268 97
13 Vincent McGillvary..	1,330 10	1,330 10
14 Frank McGillvary...	1,299 61	1,299 61
15 Dan. A. McInnis.....	1,330 10	1,330 10
16 John Mahon	953 61	953 61
17 W. D. Morrison.....	1,268 97	1,268 97
18 J. T. Mullins.....	1,330 10	1,330 10
19 Bernard Mullins.	1,330 10	1,330 10
20 John McNeil.....	1,268 97	1,268 97
21 Thomas McNeil.....	1,268 97	1,268 97
22 Henry Petrie.....	1,268 97	1,268 97
23 Edmund F. Petrie....	1,268 97	1,268 97
24 William Perry...	1,330 10	1,330 10
25 Herbert Ratchford..	1,330 10	1,330 10
26 Thomas Ratchford...	1,268 97	1,268 97
27 Arthur R. Richardson	1,268 97	1,268 97
28 Peter Rigby.....	1,330 10	1,330 10
29 Thomas Roberts.	1,330 10	1,330 10
30 Thomas Rudderham.	1,268 97	1,268 97
31 Geo. Spencer	1,330 10	1,330 10
32 Jas. P. Young.....	1,268 97	1,268 97
33 Michael Curran.....	1,268 97	1,268 97
	42,194 87	42,194 87

Apprentices.	Earnings.	Amount paid to each.
	\$ cts	\$ cts.
1 W. D. McGillvary.....	602 07	602 07
2 Emmett McGrath.....	665 18	665 18
3 D. J. McInnis.....	634 59	634 59
4 Hilliard Forward	634 59	634 59
5 Bert Ling	634 59	634 59
6 John H. Laffin.....	634 59	634 59
	3,805 61	3,805 61

White Flag ships licensed for the year.	Amount paid.
	\$ cts
SS. <i>Cohan</i>	100 00
<i>Cape Breton</i>	100 00
<i>Louisburg</i> ..	100 00
<i>Nacuda</i>	100 00
<i>Corunna</i>	100 00
<i>Morwenna</i>	100 00
<i>Wasis</i>	100 00
<i>Beatrice</i>	100 00
<i>Senlac</i>	100 00
	900 00

7 GEORGE V, A. 1917

PILOTAGE DISTRICT OF SYDNEY, N.S.—Continued.

Vessels which paid pilotage dues.	Number.	Tonnage.	Amount paid.
			\$ cts.
British steam vessels.....	734	1,536,220	35,923 50
British sailing vessels.....	13	2,292	124 50
Foreign steam vessels....	327	647,931	15,613 00
Foreign sailing vessels.....	25	5,971	284 00
	1,099	2,192,414	51,945 00

PENSION FUND.

	Amount paid.
	\$ cts.
Widows, M. Petrie, D. Petrie, J. Petrie, J. Brown, M. A. Brown, Townsend, McGillvary, McGinnis, Ratchford, \$30 each	270 00
Miss M. Mullins...	90 00
Ex-Pilots Ratchford, Burke, Connell, Fraser, Ling, \$50 each.	250 00
	610 00

RECEIPTS AND EXPENDITURE.

	Receipts.	Expenditure.
	\$ cts.	\$ cts.
Balance forward from 1914	278 97	
Pilotage receipts.....	48,119 15	
White flag licenses.....	900 00	
Pilot licenses.....	117 00	
Boat licenses.....	4 00	
Commission.....	2,598 30	
Pension fund	1,107 50	
Paid to pilots.....		42,144 87
Paid to apprentices.....		3,805 61
Pilots' operating expenses.....		2,118 67
Pensions.....		610 00
Commissioners' fees.....		775 00
Collectors' salaries.....		875 00
Collectors' office rent..		100 00
Superintendent's salary.....		250 00
Secretary's salary.....		500 00
Secretary's office rent.....		100 00
Settled claim of Ex-Pilot (Geo. Brown, estate).....		155 75
Miscellaneous expenses.....		140 42
Balance in hand.....	392 10	
Pension fund account.....		1,107 55
	53,124 97	53,124 97

*\$1,000 war loan, \$968.60.

In savings bank, \$138.95.

SESSIONAL PAPER No. 21

PILOTAGE DISTRICT OF SYDNEY, N.S.—Continued.

PILOTAGE RATES

	To Sydney	To North Sydney.
	\$ cts	\$ cts.
For vessels under 100 tons.....	6 00	5 00
From 100 tons to 150 tons.....	7 00	6 00
“ 150 “ 200 “.....	8 00	7 00
“ 200 “ 250 “.....	9 00	8 00
“ 250 “ 300 “.....	10 00	9 00
“ 300 “ 350 “.....	11 00	10 00
“ 350 “ 400 “.....	12 00	11 00
and for every additional 50 tons or fractional part thereof \$1; for vessels 800 tons and upwards \$1 for every additional 100 tons or fractional part thereof. Outward pilotage shall be the same as inward.		

The payment of pilotage dues is compulsory in the pilotage district of Sydney, N.S.

F. C. KIMBER,
Secretary.

PILOTAGE DISTRICT OF LOUISBURG, N.S.

Pilot Commissioners.	Date of Appointment.
Thos. Townsend.....	Sept. 10, 1898
John Dickson.....	Sept. 25, 1907
E. G. Whittman.....	Nov. 1915
James Kelly.....	Nov. 1915
L. McQuin.....	Nov. 1915

Pilots.	Date of Appointment.	Age.	Earnings.	Amount paid to each.
			\$ cts	\$ cts.
1 Pierce Pope.....	May 7, 1914	43	1,187 33	1,187 33
2 Thos. Wilcox.....	May 7, 1915	52	1,187 33	1,187 33
3 John Power.....	May 7, 1914	55	1,187 33	1,187 33
4 J. E. Tutty.....	May 7, 1914	57	1,187 33	1,187 33
5 W. H. Townsend.....	May 7, 1915	69	1,187 33	1,187 33
6 Wm. Williams.....	May 7, 1914	47	1,187 33	1,187 33
7 Lewis Tutty.....	May 7, 1915	46	1,187 33	1,187 33
8 John Kelly.....	Mar. 1, 1915	54	1,187 33	1,187 33
			9,498 64	9,498 64

PILOT BOATS.—7 ready for use.

PILOTAGE DISTRICT OF LOUISBURG, N.S.—*Concluded.*

Vessels which paid pilotage dues.	Number.	Tonnage.	Amount paid.
			\$ cts.
British steam vessels.....	107	223, 115	4, 296 17
British sailing vessels.....	75	61, 021	1, 812 00
Foreign steam vessels.....	136	200, 080	4, 020 00
Foreign sailing vessels.....	1	221	12 00
	319	484, 437	10, 140 17

RECEIPTS AND EXPENDITURES.

	Receipts.	Expendi- ture.
	\$ cts.	\$ cts.
British steam ships.....	4, 296 17	
British sailing ships.....	1, 812 00	
Foreign steam vessels.....	4, 020 00	
Foreign sailing vessels.....	12 00	
Docking and shifting ships.....	486 00	
Taking orders to ships.....	70 00	
Commission and stationery.....		400 27
Other bills to maintain service.....		797 26
Paid pilots.....		9, 498 64
	10, 696 17	10, 696 17

PILOTAGE RATES.

	Inward.	Outward.
	\$ cts.	\$ cts.
On sail and steamships of—		
80 tons to 120 tons.....	4 00	3 00
120 " 200 ".....	6 00	4 00
200 " 300 ".....	7 00	5 00
300 " 400 ".....	8 00	6 00
400 " 500 ".....	10 00	8 00
500 " 700 ".....	11 00	9 00
700 " 1, 000 ".....	13 00	11 00
1, 000 " 1, 500 ".....	15 00	12 00
1, 500 " 2, 000 ".....	16 00	14 00
2, 000 " 2, 500 ".....	18 00	16 00
2, 500 " 3, 000 ".....	22 00	18 00

Over 3,000 tons register, one cent per ton additional inward, and one cent per ton additional outward.

Winter pilotage after November 30 up to and including April 30, shall be twenty per cent additional to the above rates on sail and steamships.

The payment of pilotage dues is compulsory in the pilotage district of Louisburg, N.S.

THOS. TOWNSEND,
Secretary.

SESSIONAL PAPER No. 21

PILOTAGE DISTRICT OF PICTOU, N.S.

Pilot Commissioners.	Date of Appointment.
Capt. H. McKenzie	Oct. 19, 1912
G. Adam Carson...	Oct. 19, 1912
J. R. Davies.....	Oct. 19, 1912
G. Adam Pringle...	Oct. 19, 1912
John W. McKay....	May 31, 1915

Pilots.	Date of Appointment.	Age.	Net Earnings.
			\$ cts.
McGregor Fraser.....	May 26, 1899	48	980 07
Wm. McPherson.	Mar. 3, 1903	41	811 77
Willard Fraser.....	April 29, 1903	39	463 26
Albert McDonald.....	Dec. 1, 1914	25	592 99
			2,848 09

White Flag Ships Licensed for the Year.	Amount paid.
<i>Cascapedia</i>	\$40 00

Vessels which paid pilotage dues.	Number.	Tonnage.	Amount paid.
			\$ cts.
British steam vessels.....	16	16,291	690 61
British sailing vessels.....	9	2,246	193 00
Foreign steam vessels.....	12	23,081	1,041 36
Foreign sailing vessels.....	25	16,291	1,056 29
	62	57,909	2,981 26

Pilot Boats.	Cost of Maintenance.
Blanche G. Smith No. 2	\$150 00

RECEIPTS AND EXPENDITURE.

	Receipts.	Expendi- ture.
	\$ cts.	\$ cts.
Pilotage dues.....	2,981 26	
License <i>Cascapedia</i>	40 00	
Half Pilotage.....	70 07	
Pilots' bonds.....	4 00	
Paid pilots		2,848 09
Expenses		247 24
	3,095 33	3,095 33

7 GEORGE V, A. 1917

PILOTAGE DISTRICT OF PICTOU, N.S.—*Concluded.*

PILOTAGE RATES.

		Inward.	Outward.
		\$ cts.	\$ cts.
Vessels of—			
120 tons to 140 "		6 00	4 00
140 " 200 "		10 00	6 00
200 " 300 "		12 00	8 00
300 " 400 "		14 00	9 00
400 " 500 "		15 00	10 00
500 " 600 "		16 00	11 00
600 " 700 "		17 00	12 00
700 " 800 "		18 00	13 00
800 " 900 "		19 00	14 00
900 " 1,000 "		20 00	15 00

Vessels of 1,000 tons and upwards 2½ cents inwards, and 2 cents outwards.
All vessels under 120 tons \$4 inwards and \$2 outwards.

Docking and moving vessels from anchorage in harbour, \$4 for each move.

The payment of pilotage dues is compulsory in the pilotage district of Pictou, N.S.

G. ADAM PRINGLE,
Secretary.

PILOTAGE DISTRICT OF MINAS BASIN, N.S.

Pilot Commissioners.	Date of Appointment.
Captain Stephen Smith.....	April 9, 1907
Captain R. Lawrence	Mar. 14, 1910
T. A. Masters.....	Mar. 14, 1910
Frederic Gordon.....	April 9, 1907
Captain Wm. McCulloch.....	April 24, 1911

No pilot.
No pilotage done during the year.

Pilotage Rates.

Canadian vessels of 120 tons and under free.

From the pilot-boat anchored in the Basin of Minas to Walton, to Tene-cape, to Cheverie, to Summerville, to Avondale, to Miller Creek, to Went-worth, to Windsor, to Hantsport, to Avonport, to Horton Landing, to Wolf-ville, to Port Williams, to Picket Wharf, to Canning, to anchorage below Horton Bluff light, on vessels under sail, barges in tow, or steamers:

		Inward.	Outward.
		\$ cts.	\$ cts.
On vessels over 120 tons and under 200 tons.....		9 60	6 00
" 200 " 300 "		15 20	8 40
" 300 " 400 "		16 80	10 80
" 400 " 500 "		19 20	12 00
" 500 " 600 "		21 60	13 20

SESSIONAL PAPER No. 21

PILOTAGE DISTRICT OF MINAS BASIN, N.S.—*Concluded.*

Over 600 tons inward an additional 3 cents for every ton above 600 tons.
Outwards an additional 2 cents for every ton over 600 tons.

From the pilot-boat anchored in the Minas basin to Pereaux, to Kingsport and Mill Creek.

On vessels of 120 tons and under free.
On vessels under sail, barges in tow or steamers:—

	Inward.	Outward.
	\$ cts.	\$ cts.
Over 120 tons and under 200 tons	8 00	5 00
“ 200 “ 300 “	11 00	7 00
“ 300 “ 400 “	14 00	9 00
“ 400 “ 500 “	16 00	10 00
“ 500 “ 600 “	18 00	11 00

Over 600 tons inward, an additional 2 cents for every ton above 600 tons.
Outwards an additional 2 cents for every ton above 600 tons.

The payment of pilotage dues is compulsory in the pilotage district of Minas Basin, N.S.

BRENTON BORDEN,
Secretary.

PILOTAGE DISTRICT OF BRAS D'OR LAKES, N.S.

Pilot Commissioners.	Date of Appointment.	
Capt. Dan McRae	April, 1906	
D. J. McRae.....	April, 1906	
Geo. Hollifield...	April, 1906	

Pilots.	Date of Appointment.	Age.
1 Archie Livingston.....	1894	67
2 Dan Campbell	1894	52
3 Geo. McKay.....	1894	62
4 Wm. Carey	1895	64
5 Ingraham Carey. . .	1897	46
6 Nick Murphy . . .	1909	55
7 C. S. McNeil.....	1913	46

PILOTAGE DISTRICT OF BRAS D'OR LAKES, N.S.—*Concluded.*

Amounts so small that Pilotage Authority has no account of them.

PILOTAGE RATES.

Tonnage.	Big Bras d'Or.	Port Devis.	St. Ann	Little Narrows.	Grand Narrows to boundary line of District.	Baddeck.
	\$ cts	\$ cts	\$ cts	\$ cts	\$ cts.	\$ cts.
120—200.....	5 00	7 00	7 00	11 00	12 50	8 00
200—250.....	6 00	8 00	8 00	14 00	14 50	11 00
250—300.....	7 00	9 00	9 00	16 00	15 60	12 00
300—350.....	8 00	12 00	12 00	17 00	17 00	12 00
350—400.....	9 00	12 00	12 00	18 00	18 00	13 00
400—450.....	11 00	14 00	14 00	19 00	19 50	15 00
450—500.....	11 00	14 00	14 00	19 00	19 50	15 00
500—600.....	12 00	15 00	15 00	19 00	20 00	16 00
600—700.....	13 00	16 00	16 00	20 00	21 00	17 00
700—800.....	14 00	17 00	17 00	21 00	22 00	18 00
800—900.....	15 00	18 00	18 00	22 00	23 00	19 00
900—1,000.....	16 00	19 00	19 00	23 00	24 00	20 00
1,000—1,500.....	18 00	21 00	21 00	24 00	25 50	22 00
1,500—2,000.....	21 00	24 00	24 00	26 00	27 50	25 00

The payment of pilotage dues is compulsory in the pilotage district of Bras D'Or Lakes, N.S.

GEO. HOLLIFIELD,
Secretary.

PILOTAGE DISTRICT OF ST. ANN BAY, N.S.

Pilot Commissioners.		Date of Appointment.
Angus Carmichael Joseph Steele		Aug., 1914 Aug., 1914

Pilots.	Date of Appointment.	Age.
Jos. Fader.....	May 1, 1915..	63
Archibald Carmichael.....		56
Angus Monson.....		45
Murdock Carmichael.....		40

*Vessels which paid pilotage dues.	Tonnage.	Amount paid.
Foreign steam vessels	15,118	
Foreign sailing vessels	585	\$572.00
	15,703	\$572.00

SESSIONAL PAPER No. 21

PILOTAGE DISTRICT OF ST. ANN BAY, N.S.—*Concluded.*

PILOTAGE RATES.

	\$ cts.
Vessels of—	
120 to 200 tons.....	7 00
200 to 250 tons.....	8 00
250 to 300 tons.....	9 00
300 to 350 tons.....	12 00
350 to 400 tons.....	13 00
400 to 450 tons.....	14 00
450 to 500 tons.....	15 00
500 to 600 tons.....	16 00
600 to 700 tons.....	17 00
700 to 800 tons.....	18 0
800 to 900 tons.....	19 00
900 to 1,000.....	20
1,000 to 1,500 tons.	21 00
1,500 to 2,000 tons	24 00

The payment of pilotage dues is compulsory in the pilotage district of St. Ann, N.S.

ANGUS CARMICHAEL,
Secretary.

PILOTAGE DISTRICT OF NORTHPORT AND TIDNISH, N.S.

Pilot Commissioners.	Date of Appointment.
John Campbell....	May 1, 1901
Silas Taylor.....	Mar. 28, 1902
J. Harvey Angus..	June 19, 1902
David Mitchell	June 15, 1903
Charles Ackles....	Nov. 25, 1913

Pilots.	Date of Appointment.	Age.	Earnings.	Amount paid to each.
			\$ cts	\$ cts.
Ferguson Brownell.....	Aug. 31, 1899	64		
Walter Ackles.....	Feb. 27, 1913..	40	63 00	60 00
Fred Ackles.....	April 30, 1915.	29		

Pilot Boats.	Cost of Maintenance.
2, Painting and repairing.....	\$ 6 00

7 GEORGE V, A. 1917

PILOTAGE DISTRICT OF NORTHPORT AND TIDNISH, N.S.—*Concluded.*

Vessels which paid Pilotage dues.	Number.	Tonnage.	Amount paid.
Foreign sailing vessels (<i>Vega and Tamra</i>).....	2	575 600 1,175	\$ cts. 63 00
Receipts and Expenditure.		Receipts.	Expendi- ture.
Pilotage fees		\$ cts. 63 00	\$ cts.
Paid to pilots.....			60 00
Paid to secretary.....			3 00
		63 00	63 00

Pilotage Rates.

Vessels of the following descriptions shall be exempted from the compulsory payment of pilotage dues in addition to those exempted by Act of Parliament, 38 Vic., Chap. 28, as amended by 40 Vic., Chap. 20; ships registered in Canada not exceeding one hundred and thirty tons registered tonnage; all other vessels coming to any point between Lewis head and the division line between the provinces of Nova Scotia and New Brunswick, shall pay inward pilotage dues at the rate of \$1.00 per foot draught of water, and vessels from the same point shall pay outward pilotage dues at the rate of \$1.00 per foot draught of water.

The payment of pilotage dues is compulsory in the pilotage district of Northport and Tidnish, N.S.

CHARLES W. ACKLES,
Secretary.

PILOTAGE DISTRICT OF PARRSBORO, N.S.

Pilot Commissioners.				Date of Appointment.
James E. Pettis.....				1881
Edward Gillespie.....				1889
Pilot.	Date of Appointment,	Age.	Earnings.	Amount paid to pilot.
Joseph Anderson.....	July 13, 1906	41	\$ cts. 1,032 37	\$ cts. 960 12

SESSIONAL PAPER No. 21

PILOTAGE DISTRICT OF PARRSBORO, N.S.—*Concluded.*

Vessels which paid pilotage dues.	Number.	Tonnage.	Amount paid.
British sailing vessels.....	1	1,700	\$ cts. 52 75
Foreign steam vessels.....	10	10,360	464 87
Foreign sailing vessels.....	10	12,268	514 75
	21	24,328	1,032 37

RECEIPTS AND EXPENDITURE.

	Receipts.	Expendi- ture.
	\$ cts	\$ cts.
Pilotage fees.....	1,032 37	
Paid Pilot Anderson.....		960 12
Paid Secretary, and contingencies ..		72 25
	1,032 37	1,032 37

The payment of pilotage dues is not compulsory in the pilotage district of Parrsboro, N.S.

E. GILLESPIE,
Secretary.

PILOTAGE DISTRICT OF SOUTHERN AND INVERNESS, N.S.

Pilot Commissioners.	Date of Appointment.
J. W. Reynolds.	March, 1904
J. J. Hennessay	March, 1904
John McDonnell	March, 1904

Pilotage not being compulsory in this district no pilots have been licensed or acting for some years.

J. W. REYNOLDS,
Secretary.

PILOTAGE DISTRICT OF ST. MARY AND LISCOMB, N.S.

Pilot Commissioners.	Date of Appointment.
Captain D. Douglas	Feb. 7, 1905
James Hemlow.....	Feb. 2, 1907
C. W. Anderson.	Feb. 2, 1907

Pilots.

Edward Quinn,	Seth McKinlay,
John Burns,	Simeon Baker,
James Burns,	Byron Scott.

Pilots collect their own fees.

Pilotage Rates.

The rates of pilotage dues for the Port of Liscomb shall be as follows:—

	Inwards.	Outwards.
Vessels of—	\$ cts	\$ cts.
120 tons and under 160 tons	5 00	7 00
160 tons up to 230 tons	6 00	8 00
230 “ 400 “	9 00	11 00
400 “ 500 “	11 00	13 00
500 “ 600 “	14 00	15 00

Vessels from 600 tons and upwards, one dollar for every additional hundred tons or fractional part of a hundred.

The rates of pilotage dues for the port of St. Mary River shall be as follows:—

	Inwards.	Outwards.
Vessels of—	\$ cts.	\$ cts.
120 tons and under 160 tons.....	5 00	7 00
160 tons up to 230 tons.....	6 00	8 00
230 “ 400 “	9 00	11 00
400 “ 500 “	11 00	13 00
500 “ 600 “	14 00	15 00

Vessels from 600 tons and upwards, one dollar for every additional hundred tons or fractional part of a hundred.

Vessels from 80 tons and under, five cents per registered ton inwards and outwards; this rate shall be up McCutcheon wharf; all vessels under 80 tons proceeding to Sherbrooke or vicinity shall pay an additional two cents per ton.

The rates of pilotage dues for port of Gegoggin shall be the same as for Liscomb, when vessels partly loaded at St. Mary or Liscomb are bound to Gegoggin to finish loading, pilots from Gegoggin are to take them there at half

SESSIONAL PAPER No. 21

PILOTAGE DISTRICT OF ST. MARY AND LISCOMB, N.S.—*Concluded.*

rates. If no pilots from Gegoggin offers, pilots from Liscomb or St. Mary have privilege to take the vessel to loading ground. Vessels that finish loading at Gegoggin must pay full pilotage.

The payment of pilotage dues is compulsory in the pilotage district of St. Mary and Liscomb, N.S.

C. W. ANDERSON,
Secretary.

PILOTAGE DISTRICT OF WALLACE, N.S.

Pilot Commissioners.	Date of Appointment.
John W. Morris.....	.. June 11, 1879
Captain Jabud MacKay.....	.. April 30, 1883
Captain F. K. Grant..	.. Oct. 6, 1891
Pilots.	Date of Appointment.
Alexander Patton	August, 1898
Hudson Langille.....	October, 1892

PILOT BOATS.—No. 1, No. 2.

No pilotage done during the year.

PILOTAGE RATES.

	Inwards.	Outwards.
	\$ cts.	\$ cts.
Vessels of —		
80 tons and under 160 tons.....	6 00	4 00
160 tons and under 230 tons	9 00	6 00
230 tons and under 400 tons.....	12 00	8 00
400 tons and upwards	14 00	10 00

On all vessels under 80 tons accepting the services of a pilot, 5 cents per ton inward, and 4 cents per ton outward. Steamers rated at net tonnage.

The above rates are for pilotage to or near the Wallace-Huestis grey stone wharf; up Wynn's channel to the Plaster wharf or up the Fox Harbour channel.

Vessels requiring the services of a pilot to Wallace bridge shall pay 25 cents per foot draught, or if to the Wallace freestone quarries or up to the bay of the Abiteau, then the sum of 5 cents per foot each way additional.

The payment of pilotage dues is compulsory in the pilotage district of Wallace, N.S.

JOHN W. MORRIS,
Secretary.

7 GEORGE V, A. 1917

PILOTAGE DISTRICT OF RICHMOND COUNTY, N.S.

Pilot Commissioners.		Date of Appointment.	
Isidore LeBlanc .		1892	
Wilhelm Babin		1892	
Henry Le Marchant .		1905	
Pilot.		Date of Appointment.	Age.
Murdock Boudrot.....		1910	45
Vessels which paid pilotage dues.		Number	Tonnage.
American Schr. <i>B. Russell</i>		1	127
British schooners.....		4	374
Russian Barque <i>Rakel</i>		1	499
American schooner <i>Spartel</i>		1	126
		7	1,126

Pilot collects the fees.

Pilotage Rates.

The following vessels, when not exceeding 250 tons register tonnage are and shall be considered exempt from compulsory pilotage:—
1st. All vessels belonging to the county of Richmond.
2nd. All fishing vessels when they shall actually be engaged in the fisheries.
The following shall be the rates of pilotage:—

		Inwards.
Vessels of—		\$ cts.
80 tons and under ... 100 tons.		5 50
100 " 150 "		6 50
150 " 200 "		7 50
200 " 250 "		9 00
250 " 300 "		10 00
300 " 350 "		11 00
350 " 400 "		12 00
And for every 50 tons or fraction thereof.		0 75

OUTWARDS.—One-half of the above rates.

The payment of pilotage dues is compulsory in the pilotage district of Richmond county, N.S.

ISIDORE LEBLANC,
Secretary.

SESSIONAL PAPER No. 21

PILOTAGE DISTRICT OF ST. JOHN, N.B.

Pilot Commissioners.			Date of Appointment.
Jas. E. Cowan.....			1912
John C. Chesley.....			1902
James Lewis.....			1912
Harold C. Schofield.....			1911
J. Willard Smith.....			1894
Henry Finnigan.....			1913
G. N. Kenneally....			1915

Pilots.	Date of Appointment.	Age.	Earnings.
			\$ cts.
1 John F. Abbott.....	1915	22	25 50
2 James Bennett.....	1882	58	1,860 45
3 Alfred Cline.....	1878	58	681 54
4 Richard B. Cline.....	1898	44	277 00
5 Joseph Doherty.....	1874	69	3,193 18
6 Robert Doherty.....	1908	30	3,337 13
7 Jas. H. Miller.....	1899	35	1,954 70
8 Wm. Murray.....	1899	41	3,461 18
9 Fenwick M. McKelvie.....	1908	29	3,219 18
10 Bartholomew Rogers.....	1881	58	3,310 08
11 James S. Spears.....	1874	70	272 93
12 Wm. J. Spears.....	1908	29	1,859 70
13 Thos. J. Stone.....	1874	62	2,483 24
14 Wm. Scott.....	1878	59	1,849 45
15 John S. Thomas.....	1874	67	1,849 45
16 Thomas Traynor.....	1874	62	1,849 45
17 Wm. Traynor.....	1915	23	76 00
On hand (in abeyance)...			61 25
			31,621 41

Amount of pilotage received.....	\$36,143 28
Less—	
25c. per foot from outward pilotage.....	\$2,109 92
7% from net pilotage.....	2,411 95
	4,521 87
	\$31,621 41

Apprentice Pilots.	Date of Appointment.	Age.
1 John Richards.....	1914	17
2 Edward Lahey.....	1914	17
3 Geo. Miller.....	1915	17
4 Geo. W. Miller.....	1914	16
5 Wm. Stanley Kelly.....	1914	17
6 Wm. B. Alexander.....	1915	15

Apprentices are paid monthly by the pilots of the boats to which they are attached.

Pilot Boats.	Cost of Maintenance.
Howard D. Troop No. 1.....	Owned and maintained by the pilots.
David Lynch No. 2.....	

7 GEORGE V, A. 1917

PILOTAGE DISTRICT OF ST. JOHN, N.B.—Continued.

Vessels which paid pilotage dues.	Number.	Tonnage.	Amount paid.
			\$ cts.
British steam vessels.....	241	783,843	24,595 73
British sailing vessels.....	59	19,789	2,342 77
Foreign steam vessels.....	38	41,407	2,719 99
Foreign sailing vessels.....	182	76,628	6,484 79
	520	921,667	36,143 28

PENSION FUND.

	\$ cts.	\$ cts.
At credit of fund, 31st December, 1914		15,378 67
By interest on bonds		750 00
By interest on bank deposits		219 63
By License fees		100 00
Income account		700 73
By 7% from net pilotage		2,411 95
		19,560 98
Contra—		
Pensions paid to pilots and widows	3,079 67	
Accrued interest on bonds	88 36	3,168 03
Balance at credit of Pilot Fund, 31st December		16,392 95

RECEIPTS AND EXPENDITURE.

	Receipts.	Expendi- ture.
	\$ cts.	\$ cts.
Balance, 31st December, 1914.....	189 34	
Dominion Savings Bank account withdrawn.....	9,982 18	
Bank of Nova Scotia savings account withdrawn.....	5,426 78	
Twelve months' interest on bonds.....	750 00	
25c. per foot from outward pilotage.....	2,109 92	
7% from net pilotage.....	2,411 95	
Licenses to 16 pilots.....	80 00	
Licenses to 2 boats.....	20 00	
Province of New Brunswick 5% bonds		15,000 00
Accrued interest thereon		88 36
Pension Account—		
Pilots		1,479 92
Widows		1,599 75
Expense Account—		
Rent and salaries		1,250 00
Auditing		25 00
Telephone		45 00
Printing		17 00
Typewriting		7 00
Painting office		41 25
Sundries.....		23 94
Balance in Bank of Nova Scotia		1,392 95
	20,970 17	20,970 17

SESSIONAL PAPER No. 21

PILOTAGE DISTRICT OF ST. JOHN, N.B.—*Concluded.*

PILOTAGE RATES.

Steamships.		Inward.
1st District.....	per foot draught of water	\$2 00
2nd District.....	" "	2 50
3rd District.....	" "	3 00
		Outward.
Steamships to Patridge island.....	" "	1 75
Down the bay of Fundy (not compulsory) ..	" "	2 75
Sailing Vessels.		Inward.
1st District.....	per foot draught of water	\$1 50
2nd District.....	" "	1 75
3rd District....	" "	2 25
		Outward.
Sailing vessels to Patridge island.....	" "	1 25
Down the bay of Fundy (not compulsory) ..	" "	2 00
Transporting Vessels.		
Up to 500 tons register.....		\$2 50
Of 500 tons and up to 1,000 tons..		5 00
Of 1,000 tons and up to 4,000 tons .		10 00
Of 4,000 tons and over.....		15 00

The payment of pilotage dues is compulsory in part in the pilotage district of St. John, N.B.

J. U. THOMAS,
Secretary.

PILOTAGE DISTRICT OF MIRAMICHI, N.B.

Pilot Commissioners.	Date of Appointment.
John C. Miller.....	April 12, 1893
W. B. Snowball.....	April 12, 1893
Ernest Hutcheson.....	April 12, 1893
Allan Ritchie.....	April 12, 1893
John P. Burchill.....	Mar. 7, 1913

7 GEORGE V. A. 1917

PILOTAGE DISTRICT OF MIRAMICHI, N.B.—*Continued.*

Pilots.	Date of Appointment.	Age.	Earnings.	Amount paid to each.
			\$ cts	\$ cts.
1 Louis Jimmo.....	May 29, 1875..	61	859 36	665 77
2 Maxime Martin.....	July 10, 1869..	70	959 36	704 11
3 Alexander Wilson.....	July 10, 1871..	69	859 36	704 11
4 Robert J. Walls.....	Jan. 12, 1870	64	859 36	742 19
5 William Walls, sr.....	April 20, 1875	61	859 36	704 10
6 James Nowlan.....	April 28, 1877.	64	745 24	590 00
7 George Sutton.....	April 28, 1878	64	859 36	665 76
8 James A. Nowlan.....	April 28, 1878	60	859 35	665 75
9 Joseph Jimmo (not piloting).....	April 28, 1879	60		
10 James McCallum.....	April 28, 1880	71	859 35	665 76
11 John Martin.....	April 28, 1880	56	859 35	665 75
12 Asa Walls.....	June 23, 1880	56	859 35	704 09
13 William Walls, jr.....	May 20, 1882..	58	859 35	704 09
14 John Nowlan.....	June 21, 1872	59	852 85	697 60
15 Mi hael Jimmo.....	Nov. 1, 1899..	48	834 24	804 04
16 Geo. M. Nolan.....	Nov. 2, 1899	59	856 24	826 04
17 George Savoy.....	Mar. 10, 1871..	71	838 24	808 04
			13,579 72	11,317 20

Pilot Boats.	Cost of Maintenance.
	\$ cts
Princess Louise.....	638 40
Senator Snowball.....	973 48
Mabel.....	
	1,611 88

Vessels which paid Pilotage dues.	Number.	Tonnage.	Amount paid.
			\$ cts.
British steam vessels.....	47	59,239	5,208 87
British sailing vessels.....	10	2,662	471 90
Foreign steam vessels.....	17	22,325	2,155 66
Foreign sailing vessels.....	114	39,924	5,643 29
	188	124,150	13,479 72

Receipts and Expenditures.	Receipts.	Expenditure.
	\$ cts.	\$ cts.
Inward pilotage.....	5,924 10	
Outward pilotage.....	7,113 62	
Removals.....	442 00	
R. J. Walls' payment.....	100 00	
Total deductions.....		2,262 52
Net balance paid pilots.....		11,317 20
	13,579 72	13,579 72

SESSIONAL PAPER No. 21

PILOTAGE DISTRICT OF MIRAMICHI, N.B.—*Concluded.*

Pilotage Rates.

When inward bound, \$2.25 per foot.

And in addition to the above for all vessels propelled wholly or in part by steam, 2 cents per registered ton.

When outward bound, \$2 per foot.

And in addition to the above for all vessels propelled wholly or in part by steam, 2 cents per registered ton.

For the removal and mooring of vessels of over 300 tons register, \$4.

And where the distance of removal exceeds four miles, 50 per cent additional on the above rate.

Removals within a distance of one mile are not compulsory, but when pilots are requested to perform this service the charge is \$4.

Steam tug-boats towing one or more barges with cargo inward, may depart outward after having paid full pilotage for the tug and barges inward, without paying any outward pilotage, except for the tug.

The payment of pilotage dues is compulsory in the pilotage district of Miramichi, N.B.

BYRON N. CALL,
Secretary.

PILOTAGE DISTRICT OF RESTIGOUCHE, N.B.

Pilot Commissioners.	Date of Appointment.	
W. F. Napier.....	Dec. 6, 1905	
David Chanpoux.....	Feb. 8, 1907	
Jas. E. Stewart.....	Mar. 2, 1912	
John T. Mowat.....	Feb. 9, 1912	

Pilots.	Age.	Amount paid to each.
		\$ cts.
Edward Elsliger....	50	1,040 16
Joseph Elsliger.....	59	1,040 16
Wm. Donahue	48	1,009 32
Daniel McNeil.	39	1,009 32
Neils Neilson	41	1,009 32
Charles Robertson.....	31	1,009 27
		6,117 55

Pilot Boats—
No. 1, No. 2, No. 3.
No accounts kept separate for each boat, pilots running the three boats together.

PILOTAGE DISTRICT OF RESTIGOUCHE, N.B.—Continued.

Vessels which paid Pilotage dues.	Number.	Tonnage.	Amount paid.
			\$ cts.
British steam vessels	7	8,881	510 60
British sailing vessels	8	1,891	322 25
Foreign steam vessels	39	45,495	2,972 77
Foreign sailing vessels.....	53	38,627	2,759 19
	107	94,894	6,564 81

Receipts and Expenditure.	Receipts.	Expenditure.
	\$ cts.	\$ cts.
Pilotage	6,564 81	
Commission, including secretary's salary		196 94
Expenses of boats and upkeep		177 37
New boat		72 95
Cash paid to pilots		6,117 55
	6,564 81	6,564 81

Pilotage Rates.

The rates of pilotage including the properly securing and mooring all ships or vessels piloted by the several pilots within the pilotage district of Restigouche shall be as follows:—For every foot of water any ship or vessel shall draw at the time inward or outward bound Port of Dalhousie, Benjamin, Beaver Point, Nash's Creek, Jacquet River or any loading station east of Dalhousie on the bay of Chaleur, one dollar; Port of Campbellton, one dollar and fifty cents; Oak Bay or any loading station east of same, west of Dalhousie, one dollar and twenty-five cents when ships proceed direct from sea.

Ships bound for Dalhousie, Benjamin, Beaver Point, Nash's Creek, Jacquet River, or any loading station east of Dalhousie, calling at any of the said harbours for orders, or to discharge ballast, cargo, or otherwise on ship's account one dollar; and thence to any other of the said ports or loading stations on the bay of Chaleur fifty cents per foot on draught of such ship at the time.

Ships bound for Campbellton, Oak Bay, or any loading station east of Oak Bay and west of Dalhousie, waiting at Dalhousie or at any of the outer or Bay Ports to discharge ballast, cargo, or otherwise on ship's account, one dollar; and thence to the said Port of Campbellton, seventy-five cents; Oak Bay or any loading station east of Oak Bay and west of Dalhousie, fifty cents per foot on draught of such ship at the time and vice versa.

For the removal of any ship including the properly securing and mooring such ship the following rates, viz.,—The sum of one dollar and fifty cents for ships not exceeding one hundred and twenty tons: the sum of two dollars for ships over one hundred and twenty tons, and not exceeding two hundred tons; the sum of three dollars for ships over two hundred tons, and not exceeding three hundred tons; the sum of four dollars for ships over three hundred tons and not exceeding six hundred tons; and the sum of five dollars for all ships over six hundred tons; and when the distance of removal extends four

SESSIONAL PAPER No. 21

PILOTAGE DISTRICT OF RESTIGOUCHE, N.B.—*Concluded.*

miles, fifty per cent additional to above rates. In addition to above rates [all vessels propelled wholly or in part by steam shall pay one cent inwards and one cent outwards per net register tonnage.

The payment of pilotage dues is compulsory in the pilotage district of Restigouche, N.B.

A. F. CARR,
Secretary.

PILOTAGE DISTRICT OF CARAQUET, N.B.

Pilot Commissioners.		Date of Appointment	
George De La Riche... ..		April 6, 1903	
Chas. Robichaud ..		June 29, 1910	
Henry Duguay.....		June 29, 1910	
Peter J. Piot ..		July 6, 1913	
Colson Hubbard ..		Nov. 11, 1881	

Pilots.		Earnings.	
		\$ cts.	
Lazare Gauvin....		47 20	
Alexander J. Nelson ..		23 40	
Joseph Cheassen ...		10 00	
Ernest Marks.			
Theotince H. Le Bouthillier..			
James Lantergue.....		80 60	

Vessels which paid Pilotage dues.	Number.	Tonnage.	Amount paid.
			\$ cts.
British sailing vessels ..	4	412	70 60
Foreign sailing vessels ...	1	100	10 00
	5	542	80 60

Receipts and Expenditure.		Receipts.		Expenditure.	
		\$ cts.		\$ cts.	
Pilotage fees.....		80 60		80 60	
Paid pilots.. ..				80 60	
		80 60		80 60	

7 GEORGE V, A. 1917

PILOTAGE DISTRICT OF CARAQUET, N.B.—*Concluded.*

PILOTAGE RATES.

£1 20 per foot inwards.
1 00 per foot outwards.

The payment of pilotage dues is compulsory in the pilotage district of Caraquet, N.B.

COLSON HUBBARD,
Secretary.

PILOTAGE DISTRICT OF SHEPODY BASIN, N.B.

Pilot Commissioners.			Date of Appointment.
Robert C. Bacon....			911
Geo. R. Payzant....			1911
Watson H. Steeves..			Oct. 12, 1912
Isaac C. Prescott....			Oct. 12, 1912
B. T. Carter.			Oct. 12, 1912

Pilots.	Date of Appointment.	Age.	Earnings.
			\$ cts.
Luther C. Martin.....	April, 1915.	66	534 65
John J. Christopher.....	April, 1914.	52	237 73
Wm. J. Milburn.....	April, 1914	45	324 57
			1,096 95

PILOT BOATS.—L. C. Martin, No. 2. Wm. J. Milburn. Pilots own and maintain the boats themselves.

Vessels which paid pilotage dues.	Number.	Tonnage.	Amount paid.
			\$ ct
British steam vessels.....	17	8,283	312 90
British sailing vessels.....	15	11,008	378 65
Foreign steam vessels.....	1	691	24 18
Foreign sailing vessels.....	23	11,048	381 22
	56	31,030	1,096 95

SESSIONAL PAPER No. 21

PILOTAGE DISTRICT OF SHEPODY BASIN, N.B.—*Concluded.*

RECEIPTS AND EXPENDITURE.

	Receipts.	Expendi- ture.
	\$ cts.	\$ cts.
Luther C. Martin—Pilot license for 1 year to April 1, 1916.....	10 00	
L. C. Martin—Boat license.....	2 00	
John J. Christopher—Boat license.....	2 00	
Wm. J. Milburn—Boat license.....	2 00	
To Commissioners—		
Watson H. Steeves		3 33
B. T. Carter		3 33
Isaac C. Prescott		3 34
B. T. Carter (for inspecting boats)		6 00
	16 00	16 00

Pilotage Rates.

Inward pilotage $1\frac{1}{2}$ cent per registered ton. Outward pilotage 2 cents per registered ton.

Removal of vessels under 500 tons, distance under four miles, \$4.00. Above 500 tons register, distances under four miles, \$5.90. When the distance exceeds four miles, 50 cents additional.

The payment of pilotage dues is compulsory in the pilotage district of Shepody Basin, N.B.

B. T. CARTER,
Secretary.

PILOTAGE DISTRICT OF BATHURST, N.B.

Pilot Commissioners.	Date of Appointment.
John J. S. Hachey	May 16, 1903
Henry White	Sept. 20, 1904
Thos. Canty.....	Aug. 30, 1907
Oscar Fenwick.....	Mar. 25, 1915

Pilots.	Earnings.	Amount paid to each.
	\$ cts.	\$ cts.
Wm. Daley.....	336 60	336 60
Peter J. Roy	342 92	342 92
David R. Ronalds.....	186 54	186 5
	866 06	866 06

7 GEORGE V. A. 1917

PILOTAGE DISTRICT OF BATHURST, N.B.—Continued.

Vessels which paid pilotage dues.	Number.	Tonnage.	Amount paid.
		\$ cts.	\$ cts.
British steam vessels.....	2	1,901	76 51
British sailing vessels.....	6	1,009	138 60
Foreign steam vessels.....	10	7,995	438 25
Foreign sailing vessels.....	7	2,979	212 70
	25	13,844	866 06

RECEIPTS AND EXPENDITURE.

	Receipts.	Expendi- ture.
	\$ cts.	\$ cts.
Pilotage fees.....	866 06	
Paid pilots.....		866 06
	866 06	866 06

PILOTAGE RATES.

Sailing Vessels.	Per foot.
	\$ cts.
Inwards—	
To the Forks of the Channel	1 20
To above said Forks.....	1 40
Outwards—	
From below the Forks.....	0 80
From above the Forks.....	1 00

STEAMERS.

In addition to the rates paid by sailing vessels, steamers shall pay one cent per register or net ton inwards or outwards, but shall not be required to pay the additional fee both ways; and in event of a change of pilots, going outwards, this additional fee shall be divided equally between the pilots concerned.

If any ship or vessel shall come to anchor at ballast ground or outer loading berth without having been spoken by a pilot, such ship or vessel having had her signal for a pilot displayed from the time she entered the pilotage district, until she came to anchor, shall be exempt from inward pilotage.

The fees for moving a vessel, whether sail or steam, will be as follows:—

From the ballast ground to loading berth outside Bar.....	\$4 00
From one loading berth to another inside the harbour.....	4 00

From the ballast ground to inside the harbour above the usual loading ground outside the Bar, half the inward pilotage of \$1.40 per foot.

The ballast ground, so far as it relates to pilotage matters, shall be understood to be anywhere outside the ballast buoy, in not more than twelve fathoms

SESSIONAL *PAPER No. 21

PILOTAGE DISTRICT OF BATHURST, N.B.—*Concluded.*

of water, with lights in range about southwest from vessels. No fees shall be paid for moving vessels, unless the services of a pilot have been offered or rendered.

The payment of pilotage dues is compulsory in the pilotage district of Bathurst, N.B.

JOSEPH HENDERSON,
Secretary.

PILOTAGE DISTRICT OF BAIE VERTE AND CAPE TORMENTINE, N.B.

Pilot Commissioners.	Date of Appointment.
I. Murphy.....	June 15, 1912
L. Gould.....	June 15, 1912
Wm. Farquharson	June 15, 1912
Jacob Allen.....	June 15, 1912

No. Pilots.

No pilotage done during the year.

PILOTAGE RATES.

\$2 00 per foot inward for steamers.
2 00 " outward for steamers.
1 50 " inward for sailing vessels.
1 50 " outward for sailing vessels

The payment of pilotage dues is compulsory in the pilotage district of Baie Verte and Cape Tormentine, N.B.

WM. FARQUHARSON,
Secretary.

PILOTAGE DISTRICT OF SHEDIAC, N.B.

Pilot Commissioners.	Date of Appointment.
Michael Connors .	1906
Charles Roberts	1906
George McDevitt	1906
D. J. Dorion . .	1906
E. R. McDonald.....	1906

PILOTAGE DISTRICT OF SHEDIAC, N.B.—*Concluded.*

Pilots.		Age.	
Thomas McGrath.....		69	
Oliff Hendricksen		54	
Paul P. LeBlanc.....		71	

Vessels which paid Pilotage dues	Number.	Tonnage.	Amount paid.
Foreign sailing vessels.....	4	\$ 2,404	\$ cts. 156 25

Receipts and Expenditures.	Receipts.	Expenditure.
Pilotage dues..	156 25	
Paid pilots		153 13
Commission on pilotage dues		3 12
	156 25	156 25

Pilotage Rates.

The rate of pilotage for this district is \$1.50 per foot draught of water for vessels inward, \$1.50 per foot draught of water for vessels outward bound, and for the removal of any ships or vessels properly secured and moved, the sum of \$4 for each such removal, hauling a vessel into wharf or dock from the stream not to be considered a removal.

It was ordered on May 30, 1908, that all ships or vessels propelled by steam or driven by power other than sails, shall pay 4 cents per ton on her registered tonnage in addition to the above rates.

The payment of pilotage dues is compulsory in the pilotage district of Shediac, N.B.

E. R. McDONALD,
Secretary.

SESSIONAL PAPER No. 21

PILOTAGE DISTRICT OF HARVEY AND ALMA, N.B.

Pilot Commissioners.				Date of Appointment.
Major C. Anderson Ramsford Butland Ira H. Copp .				1901 1911 1911
Pilots.	Date of Appointment	Age.	Earnings.	Amount paid to each.
			\$ cts.	\$ cts.
Captain David F. Alexander.....	1915	60	216 07	216 07
" Bedford Dickson.....	1915	42	296 38	296 38
" Arthur Edgett.....	1915	56	276 28	276 28
			788 73	788 73
Pilot Boats.				Cost of Maintenance.
				\$ cts.
Bertha				75 00
Hand No. 1				75 00
Boat No. 2.....				51 25
				201 25
Vessels which paid pilorage dues.	Number.	Tonnage.	Amount paid.	
			\$ cts.	
British steam vessels.....	1	1,673	54	37
British sailing vessels.....	3	2,147	87	72
Foreign steam vessels.....	12	17,299	513	38
Foreign sailing vessels.....	7	4,773	147	46
	23	25,870	802	93

Pilotage Rates.

From 1 cent to 2 cents per registered ton according to distance.

The payment of pilotage dues is compulsory in the pilotage district of Harvey and Alma, N.B.

MAJOR C. ANDERSON,
Secretary.

7 GEORGE V, A. 1917

PILOTAGE DISTRICT OF RICHIBUCTO, N.B.

Pilot Commissioners.	Date of Appointment.
W. J. Brait.....	May 8, 1888
R. O'Leary	June 21, 1909
Frank Curran...	June 21, 1909
W. E. Forbes...	June 21, 1909
Fred Ferguson.	June 21, 1909

PILOTS.

Geo. Long.
Albert Long.
John Curwin.
Henry Irving.

Vessels which paid pilotage dues.	Number.	Tonnage.	Amount. paid.
Foreign sailing vessels.....	7	1,710	\$ cts. 250 00

PILOTAGE RATES.

\$1 50 per foot inward.
1 50 per foot outward.

The payment of pilotage dues is compulsory in the pilotage district of Richibucto, N.B.

FRED FERGUSON,
Secretary.

APPENDIX No. 10.

RECORD OF SHIPPING, as per record folio, from 1st April, 1915 to 31st March, 1916.

R—Reported. A—Arrived. P—Passed.

SIGNAL STATION, CITADEL, HALIFAX, N. S.

Months.	Men of War, British.			Men of War, Foreign.			Steamers, 1st Class.			Steamers, 2nd Class.			Ship Barques Barquentines.			Brigs and Brigantines.			Schooners, 3 Mast, or bearing private Signals.			Monthly Totals.		
	R.	A.	P.	R.	A.	P.	R.	A.	P.	R.	A.	P.	R.	A.	P.	R.	A.	P.	R.	A.	P.	R.	A.	P.
1915-1916.																								
April.....	7	7					80	77	3	25	25		6	6					7	7		125	122	3
May	8	8					58	56	2	34	34		12	12					14	14		126	124	2
June.....	6	6					54	50	4	35	35		16	16		1	1		11	11		123	119	4
July.....	8	8					59	58	1	35	35		5	5		1	1		16	16		124	123	1
August ...	10	10					72	72		37	37		9	9					15	15		143	143	
September..	13	13		1	1		49	49		30	30		3	3					14	14		110	110	
October... ..	13	13					64	63	1	35	35		10	10					8	8		130	129	1
November. .	2	2					76	69	7	26	26		5	5					5	5		114	107	7
December....	4	4					77	68	9	30	30		1	1					11	11		123	114	9
January.	2	2					68	64	4	25	25								7	7		102	98	4
February....							74	73	1	11	11		1	1					5	5		91	90	1
March ..	3	3					87	80	7	22	22								3	3		115	108	7
	76	76		1	1		818	779	39	345	345		68	68		2	2		116	116		1426	1387	39

Total vessels reported..... 1,426
" arrived..... 1,387
" passed..... 39

W. W. NAVIS, LIEUT. R.C.E.,
Supt. of Signals.

APPENDIX No. 11.

SABLE ISLAND

SABLE ISLAND, February 25, 1916.

Agent, Marine and Fisheries,
Dartmouth, N.S.

SIR,—I beg to submit to you my annual report for 1915, which is as follows:—
Boats on hand, similar to last season. Stock: horses 45, horn cattle 60, hogs 4.
People on Island 50, including 5 at the wireless station. Number of times did rounds, a.m. 79, p.m. 50, total 129.

Repairs to buildings at main station: shingled part of cow barn and new doors to it; shingled part of wagon house; new doors to horse barn; shingled and thoroughly repaired boat-house at No. 3 station; shingled roof and other repairs to horse barn.

Crops, potatoes, almost a failure; other vegetables, good crops about the average; hay exceedingly good, well above average.

Cattle killed, two weighing 1,100 pounds; pigs, four weighing 1,260 pounds.

Wrecks during the year, two, ss. *Silverwings*, of London, Eng., stranded August 17, near West light, and became a total wreck. Her cargo consisted of various war materials of which little or nothing was saved. She has since disappeared from view. On the morning of September 10, the auxiliary barque *Lota* of Norway ran ashore on the detached bar off east end of the island. The fog was dense, and did not clear sufficiently to sight her by the patrolmen, or from the stations, until the evening of the 11th, when a boat was dispatched as soon as possible. At noon on the 12th the crew was landed at No. 4 station. She, too, became a total wreck. Her cargo contained 7,000 or 8,000 barrels of lubricating oil, of which the greater part was lost. Some 2,000 barrels landed along the shore of the island, and we have hauled them up at various places between the east and west ends of the island. The *Lota* has also disappeared during the winter.

The crews of the two vessels, *Silverwings*, 25, and *Lota*, 19, 44 in all, were safely landed and cared for until transported to Halifax by your orders.

J. U. BLAKENEY,
Superintendent, Sable Island.

SESSIONAL PAPER No. 21

APPENDIX No. 12.

DOMINION STEAMERS.

NOVA SCOTIA DISTRICT.

Lady Laurier.

1915.—During the months of April, May and June this vessel was engaged in the lighthouse-supply service and buoy service on the eastern and western shores. In July she made a trip to lightship No. 15 with supplies. In August made lighthouse-supply trips to the eastern shore and Sable island, and cape Race and cape Freels, Newfoundland.

From September 1 to October 18 placed war buoys in war channel and on east shore and made trip to lightship No. 15. On October 18 the boiler was blown down for repairs and the vessel laid up till the end of November. During December she was engaged in eastern supply trip with Superintendent of Lights on board on trip of inspection.

1916.—January.—Employed bringing in buoys from east and west shores. February.—Engaged in buoy work and trip to lightship with supplies. March.—Engaged in buoy work east and west and in supplying lights and fog alarms.

Aranmore.

1915.—During the months of April and May this vessel was laid up for repairs. The repairs being completed and compasses adjusted, on June 26 she proceeded on a supply trip to Sable island.

From July 6 to November 25 the vessel was transferred to the Quebec Agency and employed in the lighthouse-supply and buoy service. During December she made a trip to Sable island with passengers and supplies and changed war channel buoys.

1916.—During January she supplied lighthouses on western shore until the 28th, then laid up for repairs and was under repair during February and March.

NEW BRUNSWICK DISTRICT.

Lansdowne.

On the 4th April the ship was inspected at St. John, N.B., and on the 5th, lighthouse supplies, buoys, moorings, etc., were taken on board. The steamer was employed in lighthouse-supply and buoy service throughout the spring and summer months until September 28. On that date, in trying to avoid a collision with a large motor-boat in St. John harbour, she struck the Marine wharf, damaging her bow badly. On October 2, while the *Lansdowne* was at her berth at No. 7 pier, she was run into by the SS. *Shenandoah*, and planking and rails were damaged. Cargo and coal were landed, and the ship got ready to be placed on Hilyard's blocks, at St. John, for repairs. On October 11, ship was towed to Hilyard's blocks. Remained on blocks until November 9, undergoing repairs and shipping new smokestack. On that date, ship was

7 GEORGE V, A. 1917

towed to pier No. 7, West St. John. From the 9th to 17th November the time was employed in refitting and painting the ship and taking on supplies. On the 17th she proceeded to sea and adjusted compasses, was employed in usual lighthouse and buoy service until January 2, when the tug *Sin-mac* collided with the *Lansdowne* at pier No. 6, St. John. From the 2nd till the 6th of January the vessel remained at St. John undergoing repairs. From the 7th of January till the end of March she was employed in the usual services.

Aberdeen.

This vessel is employed in the lighthouse and buoy service under the St. John Agency.

On May 14, Frank Christopher, A.B., while going ashore at Pettingill's wharf, St. John, fell off the ladder and was drowned. A very strong freshet was running at the time and all efforts to save him were unavailing.

On August 6, while at Lower Cove slip, St. John, for repairs, a slight fire occurred in the boatswain's locker, which was quickly put out without any damage. The ship remained at Lower Cove slip undergoing repairs from August 1 till September 16, when she again went to sea.

On January 5 stood by the steamer *Marina* ashore on Foul Ground and wired for assistance. A tug succeeded in getting the *Marina* off.

On February 16, while lowering a surf-boat with two men in it (Frank Foley and Clayton Atkins), they were thrown into the water. Lifebuoys were cast and boats lowered, but Foley sank and Atkins was rescued. Up to the close of the fiscal year work proceeded as usual.

PRINCE EDWARD ISLAND DISTRICT.

Minto.

The *Minto* was on the Georgetown-Pictou route at the beginning of the fiscal year. Left Pictou on the 5th April, but could not cross owing to heavy ice, returned to Pictou, left on the 6th and arrived at Georgetown on the 7th, made a single trip on the 8th, left Pictou on the 9th, arrived at Georgetown on the 10th, made single trips from the 11th to 13th, left Pictou on the 14th, and reached Charlottetown on the same day, and made single daily trips till the 8th May, and on the following day sailed from Pictou to assist the ss. *Ramus*, reported blocked in ice off Magdalen islands; but the *Ramus* having reached open water, the *Minto* returned to Pictou on the 10th, and made single trips between Pictou and Charlottetown from the 10th to the 12th, then sailed to Glace bay to render assistance to four steamers, and on the 14th returned to Pictou, and made daily trips on the Charlottetown-Pictou route until the 26th May when the winter service closed. After landing winter gear at Charlottetown, she sailed for Pictou on the 28th May, went on the slip for repairs, returned to Charlottetown on the 7th July, where she underwent repairs until the 23rd when she sailed for Halifax, and on the 5th August sailed from Sydney to Hudson bay, returned on the 29th August, and till the end of September was in Halifax undergoing repairs.

She sailed for Charlottetown on October 1, where she went under repairs at the Marine wharf until the 16th November, when she sailed to Halifax on her way to Russia having been bought by the Russian Government.

SESSIONAL PAPER No. 21

The *Minto* made forty-two single trips, carried 6,720,973 pounds of freight, 85,996 pounds expressage, 1,004 passengers, provided 548 meals and 225 berths to passengers.

She earned from freight.....	\$ 5,105 36
“ expressage.....	172 05
“ passengers.....	1,383 25
“ meals.....	54 80
“ berths.....	225 00
	<hr/>
	\$ 6,940 46

NOTE.—The meals were provided by the steward, who paid the above amount to the ship for the privilege.

Prince Edward Island.

The icebreaker *Prince Edward Island* was transferred from the Department of Railways and Canals to the Marine Department on the 10th December, arrived at Charlottetown on the 12th, remained at the Marine wharf undergoing necessary repairs, sailed for Pictou on the 21st, and returned to Charlottetown on the 25th, began the winter service on the 3rd January making one round trip, and single trips daily, from the 4th of January to the 21st February, between Charlottetown and Pictou.

She left Pictou on the 22nd, reached Charlottetown on the 23rd and left at 9.30 a.m., arrived at Pictou 7 a.m. of the 24th and returned. From the 25th February till the 3rd March, she made single trips daily on the same route, and again from March 6th till the 22nd, remaining at Pictou till the 23rd owing to a northeast snowstorm.

She sailed from Pictou at 7 a.m. of the 24th, and arrived at Charlottetown at 5.30 p.m. of the 25th, left Charlottetown 7 a.m. of the 26th and arrived at Pictou at 11.30 of April 1st, being delayed by heavy ice rafted off Pictou island.

The *Prince Edward Island* made seventy-three single trips, carried 13,035,330 pounds of freight, 332,456 pounds expressage, 2,835 passengers, provided 1,280 meals and ten berths to passengers.

She earned from freight.....	\$ 9,283 14
“ expressage.....	665 01
“ passengers.....	3,783 60
“ meals.....	232 40
“ berths.....	10 00
	<hr/>
	\$ 13,974 15

NOTE.—The meals were provided by the steward, who paid the ship the above amount for the privilege.

Stanley.

The *Stanley* was on the Georgetown-Pictou route at the beginning of the fiscal year and sailed on the Georgetown-Pictou route, April 15, when she arrived at Charlottetown and plied on that route until the 22nd May, when she ceased that service and made preparations for placing Prince Edward Island gas buoys.

7 GEORGE V, A. 1917

After completing the buoy service she left for the Halifax agency under which she served until October 30, when she arrived at Charlottetown to fit out for the winter service.

She began lifting gas buoys on the 6th December, sailed for Bryon island on the 12th to assist the vessel *Arvango* wrecked there; and after taking the captain and crew off, she sailed for Charlottetown, lifting buoys en route. After lifting the Magdalen island buoys she fitted up for the winter service, which she began from Summerside to cape Tormentine on the 29th December making round trips daily until the 10th January, 1916, when she sailed for Pictou, thence to Charlottetown, arrived at Pictou on the 12th, made single trips to Georgetown from the 13th to the 15th. Left Pictou for Charlottetown on the 17th. Went to Georgetown on the 19th, on which route she made single trips daily from the 20th January till the 12th February. She remained on the Georgetown-Pictou route until the close of the fiscal year.

She failed to cross on March 8 owing to ice conditions.

The *Stanley* made 113 single trips, carried 9,519,536 pounds of freight, 307,226 pounds expressage, 2,199 passengers, provided 1,225 meals and 531 berths to passengers.

She earned from freight.....	\$ 6,108 99
“ expressage.....	619 01
“ passengers.....	2,896 25
“ meals.....	122 50
“ berths.....	531 00
	<hr/>
	\$ 10,277 75

NOTE.—The meals were provided by the steward, who paid the above amount for the privilege.

Besides the above, the Dominion steamers carried from Charlottetown and Georgetown to Pictou, 165 horses, six sheep, ten hogs and 112 cattle from January 1 to April 30.

Brant.

The *Brant* was in charge of the Naval Service at Halifax at the beginning of the fiscal year, and remained there until the 7th May, after which she was employed in the lighthouse and buoy service of the Prince Edward Island agency until the 31st December, when the crew was paid off and she was laid up for the balance of the fiscal year.

She earned \$85 towing a D.P.W. dredge.

BRITISH COLUMBIA DISTRICT.

Estevan.

The *Estevan* was employed in the lighthouse and buoy service under the British Columbia agency.

She left for Estevan point on the 3rd April, left to attend to aids to navigation in the inner channel between Victoria and the gulf of Georgia. Was recalled to Victoria and sailed to Prince Rupert on the 26th to take the Deputy Minister and Chief Engineer on an inspection trip, returned on the 4th May, sailed for Point Grey gas buoy on the following day, put it in position, then returned and had boilers blown down for annual inspection.

SESSIONAL PAPER No. 21

She sailed to attend to all aids to navigation from Prince Rupert to Queen Charlotte sound and island waters. Returned to Victoria on the 23rd July. From then till the 31st was at Victoria; and after relieving San Juan buoy was turned over to the Victoria machinery depot for annual overhauling.

She left the Victoria machinery depot on the 28th August, began her usual work on the 1st September and took supplies for wireless telegraph stations, on the 29th September, continued the routine work till February 5th, 1916, when she sailed for Dixon entrance to search for the steamer *Onward Ho*, and to attend to other work. She was hauled out for cleaning, painting and minor repairs, began work on the 16th March and continued until the close of the fiscal year.

Quadra.

The *Quadra* sailed for Alaska boundary, Queen Charlotte island, and west coast of Vancouver island, to change the characteristics of acetylene lights, make surveys of all lighthouse and beacon sites, and attend to other sundry works en route. She returned to Victoria on June 5, and left with supplies for the west coast lightstations, as far as Estevan point and to attend to aids to navigation as far as Hesquait.

She sailed on the 28th June for the east coast of Vancouver island and from cape Mudge to Egg island, to Triangle island, on the west coast, and erected an aerial tramway at Egg island for landing supplies, and on the 13th November was placed with Yarrows, Limited, for annual overhaul and repairs.

On the 7th October she began to recharge acetylene lights and look after other aids to navigation from Victoria to Houston straits, and on the 8th November began to recharge the acetylene lights from Millbank sound to Alaska boundary, attend to stations north end of Queen Charlotte islands and land supplies and attend to other routine work.

She returned to Victoria on the 24th December, was used as a standby ship during the holidays, and sailed on the 10th January, 1916, for Triangle island with new lightkeeper, and for Queen Charlotte sound, doing work en route.

She was hauled on the "Ways" at Victoria machinery depot on the 5th February, had hull painted and broken propeller blades renewed. Sailed on the 11th with supplies for the gulf stations, erected a beacon at Drew harbour and a concrete day beacon on Clarke rocks.

On her way to Nanaimo for supplies, she was rammed by the C.P.R. steamer *Charmer*, was beached to prevent foundering, and was eventually sold by tender to the Vancouver Salvage and Dredging Company.

Leebro.

The *Leebro*, a chartered steamer, was on duty at the beginning of the fiscal year, carrying construction materials to cape Mudge where a light tower was in course of erection, and a diaphone for Scarlet Point fog alarm. She collected the necessary sand and gravel en route and on the 15th May sailed to remove the Sand Head lightship and overhaul submarine bell buoys at point Grey and Gossip reef. She was on supply trips until the 6th July, when she sailed for cape Mudge station to bring back heavy construction machinery, and afterwards took supplies and construction material for the range lightstation in course of erection at Comox bar.

On the 21st July she sailed with machinery and construction supplies for the new fog-alarm station at Scarlet point, landed supplies at stations in northern British Columbia waters, and took large scow to Prince Rupert sub-agency.

7 GEORGE V, A. 1917

She sailed with machinery and construction materials for the new fog-alarm station at Entrance island, and from the 4th October to the 24th November was carrying construction and other supplies in the gulf, then carried materials for the concrete day beacons being erected at north point of Texada island and Clarke rock, in the gulf of Georgia; and after doing other work in the same waters returned to Victoria on the 24th December for stores and provisions, returned to finish work at those stations and left for Prince Rupert on the 12th February with supplies for lightstations; en route erected an automatic beacon on Idol point, Seaforth channel. She repaired bridges at Ivory island lightstation attended to other work near Prince Rupert, and returned to Victoria on the 30th March, 1916, recharging acetylene lights on the way.

Newington.

The *Newington* was employed by the Naval Department during the entire fiscal year.

QUEBEC DISTRICT.

QUEBEC AGENCY.

Montcalm.

The *Montcalm* was employed in the lighthouse service during the summer and in icebreaking during the winter, is under the command of Capt. Edgar Pelletier, and carries a crew of seventy men.

From the beginning of the fiscal year until the 3rd May she was in Cabot straits reporting the ice conditions to incoming vessels. She was then put into dry dock where she was overhauled, boilers and machinery repaired and hull painted.

She was taken out of dry dock on the 19th June, and after loading with lighthouse supplies, sailed to Gaspé, strait of Belle Isle and Magdalen island, and returned on the 10th August, went to the assistance of the ss. *Hendonhall* which was ashore at point Desmonts, again sailed with supplies for the north shore stations, returned on the 5th October, sailed for Gaspé, Newfoundland, Magdalen islands and Anticosti on the 19th and returned on the 2nd November. The *Montcalm* was then employed in the buoy service until the 14th December, when she was sent up the Saguenay river to assist vessels to reach the St. Lawrence river in safety, sailed on the 27th December for the Gaspé coast with freight and returned on the 4th January, 1916, when she was placed under the direction of the superintending engineer of the St. Lawrence Ship Channel for icebreaking operations. The ship was at Point Carcé wharf the greater part of January undergoing minor repairs, cleaning and painting, and left Quebec on the 5th February to cut the ice on Beauport batture, and returned to Quebec. She made several trips on succeeding days to view ice conditions, started cutting heavy ice at the Bridge and Beauport batture on the 15th February, and from that date until the end of February was either watching ice conditions or cutting ice at different parts of the river. On the 17th March, she again cleared the ice at Beauport batture, sailed to Murray bay on the 23rd through closely packed ice, transferred passengers and coal to the *Champlain*, cleared track across the river for the *Champlain*, and after placing No. 67 B spar buoy in position returned to Quebec, and went into Louise basin to have her boilers repaired.

SESSIONAL PAPER No. 21

Champlain.

The *Champlain* is an icebreaker used in the ferry service between Murray Bay, Cape-a-l'Aigle and St. Irène on the north shore of the St. Lawrence river, and Rivière-Ouelle wharf on the south shore, which is connected with the Canadian Government railways at Rivière-Ouelle junction.

From the 19th June till the 11th September, she made two daily round trips except on Sunday when she made one round trip. Besides these she made four special trips.

During the rest of the year she made one round trip daily when not prevented by weather or ice conditions. She made one special trip to St. Siméon with provisions on the 19th February. She made sixteen round trips in January, seven in February, and eleven in March, there being large quantities of ice in the river.

She transported 9,228 passengers, 2,346,800 pounds of freight, 5,227 bags of mail matter weighing 11,704 pounds, furnished 1,567 meals to passengers and earned \$7,507.37.

The *Champlain* was replaced by the *Lady Evelyn* from July 26th to August 2nd while she was undergoing repairs at Quebec, and by the *Rouville* from the 4th October to the 15th November while undergoing repairs for winter service.

Druid.

The *Druid* is employed in the lighthouse and buoy service from Platon to Father Point, a distance of 185 miles, and is in command of Capt. Michael Gagnon, and carries a crew of 35 men. She was continuously employed placing and keeping buoys in position, looking after gas buoys, maintaining beacons and day-marks, towing lightships to their respective stations in the spring towing them back to Quebec in the fall, delivering lighthouse and buoy supplies, and transporting workmen to and from different stations.

The *Druid* went into commission on the 1st April and left Traverse on the 5th, began laying buoys from Platon down on the 18th and completed this work on the 25th, after which she placed the lightships in position, and was kept under steam and employed in this district during the season of navigation.

She sailed 12,341 nautical miles and consumed 2,051 tons of coal during the season.

Rouville.

The *Rouville* was employed in lighthouse and buoy supply and construction service during the season of navigation. Was in command of Capt. Cyprien Bossé, and carried a crew of twenty-three men. She arrived in Quebec, from Halifax, on the 14th May, left on construction trips on the 31st May and 17th June, returned on the 29th, and sailed on a construction trip to Lower Traverse on the 29th June, and to Upper Traverse on the 22nd July. With construction materials she sailed for the gulf of St. Lawrence, Magdalen islands and strait of Belle Isle on the 2nd August, and on a supply trip on the 4th September, returning on the 12th, and on the 20th and 23rd sailed for Upper Traverse pier with construction materials.

She replaced the *Champlain* on the ferry service from the 4th October till the 15th November, and sailed for Halifax, N.S., on the 26th with the *Barrington* lightship in tow.

The *Rouville* arrived at Halifax at the end of November, and during the months of December, January, February and March, was engaged under the Halifax agency in the lighthouse and buoy service.

7 GEORGE V, A. 1917

Eureka.

The *Eureka* was engaged as usual in the pilot service at Father Point during the season of navigation, she was in charge of Capt. A. P. Ross, and carried a crew of twenty-one men.

She left Quebec early in the spring, and attended to the embarkation and disembarkation of pilots up to the very last vessel passing her station. She returned to winter quarters at Louise Basin on the 19th December, and underwent needed alterations and repairs preparatory to next season's operations.

MONTREAL AGENCY.

Acetylene.

This scow was used in connection with general construction work and when necessary, for the buoy service, no regular crew being kept on board.

Dollard.

This vessel was employed in laying and maintaining the buoys in the St. Lawrence Ship channel and in patrolling the ship channel at least once a week from Montreal to Point Platon. She did excellent service.

Maggie May.

This chartered tug was used in connection with the derrick scow *Lenore*, and was employed in buoy service in the Ottawa river and lake St. Louis throughout the season. She also made a regular trip through the Rideau river and lakes district putting in order all the lights in that stretch of water. Among her crew were two seamen carpenters who rendered valuable aid in effecting repairs. The crew of the *Maggie May* was employed in painting the different lights in this district, putting up and taking down beacons, and carrying out repairs to lightstations. The steamer was also used for necessary construction work, delivered all the supplies on the Ottawa river and lake St. Louis and laid the buoys between Sorel and Rouse's Point.

Shamrock.

In the beginning and end of the season this vessel was employed in the work of laying and picking up the buoys, and during the middle of the season the crew was employed in painting the high lights throughout the district. The *Shamrock* also delivered supplies to the different stations on the St. Lawrence river between Montreal and Point Platon.

Vercheres.

This boat was employed on the different construction works on the St. Lawrence river, and was used when necessary, in conjunction with the scow *Acetylene*, for buoy service work on lake St. Louis, particularly in the spring.

She was also used to a considerable extent as an inspection boat.

SESSIONAL PAPER No. 21

ONTARIO DISTRICT.

Reserve.

The *Reserve* was principally employed as a tug to handle the scow *Parry Sound* in the maintenance of lights between Valleyfield on the east to Presq'ile on the west.

After undergoing repairs, she went into commission on the 13th April, 1915, and assisted by the *Scout*, placed the buoys in position from Prescott to Valleyfield.

On the 16th June she was transferred to the Montreal agency for employment in lighthouse-supply and buoy service and the scow *Parry Sound* was transferred to the Parry Sound agency on the 6th July, 1915.

Scout.

The *Scout* went into commission on the 9th April, 1915, and began placing buoys between Valleyfield and Presq'ile.

There are in this district thirty-six automatic gas buoys, one Blaugas buoy, fifteen compressed gas lighthouses unattended by keepers, two Wigham lights, 110 spar, eighteen can and conical buoys and fifty-four other aids to navigation, attended to by Government steamers.

The *Scout* finished her work on the 18th December, was placed in winter quarters, and began making necessary repairs to hull and machinery preparatory to next season's operations.

Grenville.

A description of this new vessel was given in the 1914-15 Annual Report. She was transferred to the Montreal agency on June 6.

She was placed in commission on June 5 and carried out for the balance of the season all necessary lighthouse and buoy work west of Prescott as far as Niagara river. While at dock in Toronto harbour she was struck by the tug *J. I. C. Stewart* and injured on the port quarter. Repairs were made at the expense of the owners of the tug, during the winter, and the vessel was ready for next season's work.

Lambton.

The *Lambton* was employed in the lighthouse and buoy service work on the Great Lakes and Georgian bay during the season of navigation.

She wintered at Parry Sound where she was repaired and fitted out for next season's operations.

APPENDIX No. 13.

HARBOUR COMMISSIONERS' REPORTS OF THREE RIVERS,
PICTOU, BELLEVILLE AND VANCOUVER.

The reports of the Harbour Commissioners of Montreal, Quebec and Toronto, published in previous annual reports of the Marine Department have been omitted as they are published in pamphlet form by the commissioners for general distribution.

REPORT OF HARBOUR COMMISSIONERS AT THREE RIVERS.

THREE RIVERS, P.Q., Jan. 26, 1916.

Hon. J. D. HAZEN,
Minister of Marine and Fisheries,
Ottawa.

SIR,—I have the honour to transmit the report of the operations of the Harbour Commission of Three Rivers for the year 1915. This report does not show the same prosperity as that for the year 1914, but it does not indicate any lack of equilibrium in the finances of the commission. In fact, the commissioners have spent \$28,746.50 for urgent repairs to their wharves without going into debt, and at the same time that this work was executed during the crisis caused by the war, they permitted a certain portion of the working class who were begging work, to obtain it.

The depression in the traffic of the harbour is not surprising as it has been the same throughout the country.

The requisitioning of a large number of vessels by the Imperial Government for the requirements of the war, has made transportation vessels scarcer and has naturally placed the freight rates out of reach.

To this should be added the accidents which happened in our harbour to the government coal wharves. The spring freshets caused subterranean currents to form which undermined the earth and several excavations from 20 to 25 feet deep under the wharves resulted.

This prevented the Dominion Coal Company from installing, in the right time, its discharging plant for the unloading of vessels and this company was unable to send a spring fleet to Three Rivers. For the same reason the Canadian Pacific Company had to wait until the waters had receded to erect at these wharves branch lines connecting with its principal railway line, in order to remove the coal and other merchandise from the wharves and ship the same to its destination.

On this account an important part of the season of navigation was lost and no less than one hundred thousand tons of coal, as well as other merchandise, could not be unloaded at Three Rivers.

The Honourable the Minister of Public Works was informed of these accidents,—but as Parliament did not make any appropriation for that purpose, the wharves remain as they were.

SESSIONAL PAPER No. 21

If, however, foreign imports and the shipment of coal suffered, it may be said that the remainder of the traffic in general, and that with the United States, was very active.

The exportation of sawed timber which was of little account at the beginning of the season increased considerably after the seas became clear of German submarines.

The dredging of the channel by the Government in our river, between our city and the Grand Trunk landing at Sainte-Angèle-de-Laval, was a great boon to our harbour, and has shown us that in the near future, if not in the course of the present year, the Grand Trunk Company will carry on a ferry service for the purpose of unloading its cars on our wharves and for taking the cars of railway lines from the northern part of the river and carrying them over to the southern part.

During the course of December last the Three Rivers Traction Co. inaugurated a tramway service in our city which runs along our wharves and will extend to the parishes situated on the river, to the great centres and to their railway stations. It would not, therefore, be deceiving oneself, under the circumstances, to expect our port to derive advantages in this way.

On the other hand, the Pulp Company of Grand Mere has completed a dam on the St. Maurice river, which was begun two years ago, and as this dam will raise the level of the river by 30 feet it will insure the navigability of the river between the city and Grand Mere, for boats of a pretty large tonnage.

The Minister of Roads, Mr. Tessier, who is the member for our city, is now taking steps with his government to establish a macadamized road between our city, Shawinigan and Grand Mere, which clearly indicates that the commerce of the whole region of the St. Maurice is rapidly making its way towards the port of Three Rivers.

In expectation of the above, which may soon happen, the commissioners, during last season, went to great expense to place their wharves in perfect working condition, and they urgently request that the government will not be backward in having carried out next spring the repairs to the large wharves at Moulin-à-Vent, in order that they may not remain useless during next season.

As early as the 29th April, 1914, the commissioners requested the government to amend their charter to extend the limits of the harbour and arrange to have the commissioners remunerated out of the revenues from the harbour, in return for their duties, basing their action on the fact that no unpaid services given to an important institution can yield as many advantages as if carried on along the lines of business methods.

The commissioners beg to submit in connection with the above that it is urgent that the changes to their charter be effected and they trust that the Government will take the first opportunity of meeting their wishes.

I have the honour to be, sir,

Your obedient servant,

ALFRED DESILETS,

Secretary.

7 GEORGE V, A. 1917

STATEMENT of number and tonnage of Steamers and other Vessels, reported
Inward and Outward of the Port of Three Rivers, for the year 1915.

OCEAN TRAFFIC—Return of Vessels Inward.			OCEAN TRAFFIC—Return of Vessels Outward.		
Nationality.	No.	Tons.	Cleared for.	No.	Tons.
British ..	59	103,685	Inland Ports	43	59,415
Norwegian...	3	4,982	Great Britain ..	21	51,973
Danish.....	2	2,721			
	64	111,388		64	111,388
United States Traffic.			Inland Traffic.		
Canal boats.....	198	20,111	Schooners and barges.....	283	83,525
Barges ..	4	520	Tugs and steamboats.....	206	21,100
	202	20,631		489	104,634

RECAPITULATION.

	No.	Tons.
Ocean traffic.....	64	111,388
United States traffic ..	202	20,631
Inland traffic.....	489	104,634
Grand total	755	236,653

MERCHANDISE.

Inward.	Outward.
Soft coal..... 99,542 tons.	Lumber..... 32,964,000 ft.
Hard coal .. 12,726 "	Pulpwood .. 10,257 cords
Sulphur..... 4,101 "	Sand..... 105,900 tons
China-clay. 1,344 "	Laths. 1,414,000 ft.
Pig-iron..... 15,480 "	Cement..... 260 tons
Sleepers 5,800	Shingles 1,600 ft.
Hay..... 86 tons	Coal..... 182 tons
Sand .. 364 "	Stone 65 "
Pulpwood..... 548 cords	
Bricks..... 1,462,000	
Resin..... 168 tons	
Apples..... 1,100 bushels	

Exclusive of Richelieu and Ontario and oher navigation companies' steamers, local craft, and market boats.

SESSIONAL PAPER No. 21

RECEIPTS AND DISBURSEMENTS FOR THE YEAR 1915.

Receipts.		Disbursements.	
Tonnage dues.....	\$ 2,490 00	Current expenses.....	\$1,286 23
Harbour dues: inward.....	8,179 23	Salaries and commission.....	4,060 87
“ outward.....	3,178 06	Printing and stationery.....	66 35
Rent of wharves and moorage.....	2,033 94	Repairs and general harbour expenses.	28,476 50
		Interest on debentures.	9,537 00
		Sinking fund...	1,905 00
Total receipts...	\$ 15,899 23	Total expenses...	\$ 45,331 95
Interest on deposits.....	689 44	Deposits in bank and cash on hand	
Balance on the 31st December, 1914...	33,446 72	31st December, 1915.....	4,703 44
Grand total.....	\$50,035 39		\$50,035 39

THREE RIVERS, January 25, 1916.

ALFRED DESILETS,
Secretary-Treasurer.

PICTOU HARBOUR COMMISSIONER'S REPORT.

STATEMENT of the Harbour Dues Account for Year ending December 31, 1915.

RECEIPTS.		DISBURSEMENTS.	
Balance in Bank of Nova Scotia 31st December, 1914.....	\$ cts. 100 00	1915. Jan. 4 Paid salary of harbourmaster	\$ cts. 243 30
Total collections for year 1915.....	1,242 64	“ Paid harbour commissioners	999 34
		Dec. 31. Balance on hand in bank of Nova Scotia.....	1,342 64
	1,342 64		1,342 64

Total tonnage for year 1915, 82,843 tons.

E. & O.E.

R. P. FRASER,
Collector of Customs.

7 GEORGE V, A. 1917

PICTOU HARBOUR COMMISSIONER'S REPORT—*Concluded.*

		DR.			
				\$	cts
1915					
June	2	To paid	E. C. McDonald, bushing East river.....	20	00
"	2	"	Wm. McLean, bushing harbour.....	12	00
"	2	S.S. <i>Hiawatha</i> ,	placing buoys.....	30	00
"	24	"	Wm. McLean, re-bushing harbour.....	10	00
"	24	"	Phil. Hall, painting buoys.....	7	50
Sept.	24	"	E. C. McDonald, balance due, bushing East river. .	9	50
Nov.	19	"	Western Union, telegrams.....	1	10
"	19	"	H. B. Ross, secretary.....	50	00
"	19	"	Ross Chapman, repairs to buoys.....	3	00
Dec.	31	"	H. B. Ross.....	50	00
"	31	"	Printing.....	15	00
"	31	"	Wm. McLean, balance of account.....	6	00
"	31	"	S S. <i>Hiawatha</i> , taking up buoys.....	30	00
"	31	"	Solicitors for year.....	50	00
Balance				2,341	11
				82,635	11
		CR.			
1914					
Dec.	31	By balance		1,635	87
1915					
Dec.	31	"	amount received, harbour dues for year 1915	999	34
				2,635	21
1915					
Dec.	31	By balance.....		2,341	11

Pictou, December 31, 1915.

D. SUTHERLAND, *Chairman.*
H. B. ROSS, *Secretary.*

REPORT OF BELLEVILLE HARBOUR COMMISSIONERS.

BELLEVILLE, ONT., February 5, 1916.

Deputy Minister of Marine,
Ottawa, Ont.

SIR,—Enclosed find report of Belleville Harbour Commissioners and also Harbour Master's statement for port of Belleville for the year ending December 31, 1915.

I have the honour to be, sir,
Your obdient servant,

B. L. HYMAN,
Chairman.

SESSIONAL PAPER No. 21

BELLEVILLE, ONT., February 3, 1916.

IMPORTS.			
14,602 tons of coal.....		\$1,460 20	
625 " merchandise.....		55 50	
			\$1,515 70
EXPORTS.			
404 barrels oil.....	\$	12 12	
659 tons of merchandise.....		65 90	
678 " cheese.....		67 80	
14,000 bricks.....		0 90	
			146 72
Disbursements, sundry expenses.....			\$ 1,662 42
			18 15
			\$1,644 27

All of which is respectfully submitted.

I have the honour to be, sir,
Your obedient servant,
GEO. DULMAGE.
Harbour Master.

BELLEVILLE, ONT., February 3, 1916.

1914.			\$	cts.
Dec.	31	To balance in bank, as per book.....	377	78
1915.				
May	31	" harbour dues.....	846	85
June	30	" " ".....	318	40
July	31	" " ".....	46	75
Aug.	31	" " ".....	97	47
Dec.	31	" " ".....	334	80
			2,022	05
				\$ cts.
Feb.	16	By auditor's fees.....		5 00
Mar.	19	" secretary's fees.....		50 00
April	23	" T. Coughlin, inspecting river wall.....		2 00
May	22	" B. L. Hyman, com'rs expenses to Ottawa.....		23 00
"	27	" A. P. Allen, " ".....		21 00
July	28	" C. Stapley, filling wall.....		6 50
Aug.	7	" " ".....		3 50
"	14	" " ".....		3 50
"	21	" " ".....		4 30
Sept.	22	" <i>Intelligencer</i> Printing Co.....		5 00
Oct.	7	" Interest on debentures.....		600 00
Dec.	30	" Sinking fund.....		500 00
"	31	" Harbour master's salary (12 months).....		600 00
"	31	" Balance in bank, as per book.....		198 25
			\$2,022 05	\$2,022 05

STATEMENT of Sinking Fund to December 31, 1915:—

1915		To credit of sinking fund, as per statement rendered Dec. 31, 1915.....	\$5,712 55
Dec.	31	To deposit.....	500 00
"	31	" Interest to date.....	172 70
			\$6,385 25

The above is a correct statement of the sinking Fund to December 31, 1915.

B. L. HYMAN,
Chairman.

7 GEORGE V, A. 1917

REPORT OF VANCOUVER HARBOUR COMMISSIONERS FOR THE
YEAR ENDING MARCH 31, 1916.

APRIL 15, 1916.

The Hon. J. D. HAZEN, K.C.,
Minister of Marine and Fisheries,
Ottawa.

SIR,—In Compliance with section 36, chapter 54, 3-4 George V, the harbour commissioners herewith respectfully submit a report for the year ending March 31, 1916, including a statement of all moneys received and disbursed.

During the year much time and effort have been devoted to the development of an extensive scheme of railway and water terminal facilities, announced by the commissioners in a former report.

The working out of such a project, if it is to be sufficiently comprehensive to serve the harbour and city for years to come, involves many difficulties that have to be overcome, revisions and adjustments that have to be made and much tedious negotiation with the various interests affected. So far, however, the attitude of corporations and parties interested has been that of approval, very substantial progress has been made and it is expected that all necessary negotiations will have been completed and another section of practical work entered upon in the course of the coming year.

The first unit of this project, namely, the reclamation of approximately forty acres of the Granville street mud flats will be completed, it is estimated, in about two or three months. The main viaduct approach will be on the south side of False creek but, for convenience, access also from Granville Street bridge has, with the consent of the city, been provided by means of a stairway. Industries located on this area will have the advantage of trackage connecting with the transcontinental railways and a channel 20 feet deep at low water and 350 feet wide right from False creek to the sea. Thus by an expenditure of about \$300,000, what has been in past years an unsightly waste and a menace to health in the centre of population will be made to assist in supplying Vancouver's greatest need, namely, economical industrial sites. It should here be mentioned that the plans of the commissioners provide for the application of other suitably situated areas for the purpose of attracting and encouraging industries.

Conspicuous features of the harbour now are the new government wharf at the foot of Salisbury drive which was completed at the end of November, and the new grain elevator.

The wharf—a handsome concrete structure affording 1,900 feet of berthage space—is a welcome addition to the equipment of the harbour and only waits the construction of sheds, for which tenders have been called, to make it ready for commercial use, while the grain elevator which is virtually complete, with storage capacity of 1,250,000 bushels, will, it is hoped, be of early service in connection with the abnormal exportation of grain for the use of the allies of Britain in the European war.

On the 14th June it was the privilege of the commissioners to have an interview concerning harbour matters with the deputy minister and chief engineer of the department during their visit to Vancouver and to accompany them on a tour of the entire harbour on the following day. Situated as this

SESSIONAL PAPER No. 21

harbour is, so far away from Ottawa, such opportunities of conferring with representatives of the department are of great assistance and it is a matter of regret to the commissioners that circumstances prevent them being more frequent.

From the Customs returns for the year ending 31st March, 1916, the classification of shipping entered inwards and outwards at this port is as follows:—

Foreign going inwards	1481	vessels	tonnage	.....	1,863,619
“ outwards	1312	“	“	.....	1,566,220
Coastwise going inwards	7746	“	“	.....	3,061,846
“ outwards	8055	“	“	.....	3,451,587

In conclusion, the commissioners have pleasure in reporting that the various members of the staff have been diligent and loyal in the discharge of their duties.

F. CARTER-COTTON,
JAS. A. FULLERTON,
S. McCLAY,

President.
Commissioner.
Commissioner.

SUMMARIZED STATEMENT OF OPERATIONS FOR THE YEAR ENDED MARCH 31, 1916.

REVENUE.

Rentals of waterlots, etc	\$ 11,748 12
Port Warden's fees	2,578 70
Fines and penalties	137 45
Crown grants	9,301 00
Interest	88 13
Maintenance of levees	35 00

Total revenue

\$ 23,888 40

DISBURSEMENTS.

Administration and miscellaneous expenses	\$ 17,163 43
Launch Expense Account	1,083 16
Preliminary and miscellaneous expenses in connection with reclamation scheme, Granville Street tide flats	1,291 89

Total disbursements out of revenue

\$ 19,538 48

RECEIPTS ON DEBENTURE BOND ISSUE.

Authorized issue 600 debenture bonds of \$500 each, with interest at 5 per cent, maturing in five years from 3rd January, 1916)
Bonds issued to date in connection with the development work on the Granville Street tide flats, as per contra 240 of \$500 each

120,000 00

\$ 143,888 40

DISBURSEMENT ON DEBENTURE BOND ISSUE.

Bonds issued to date to the contractors in connection with the development work on the Granville Street tide flats
(The balance of the contract will be paid as the work progresses, out of the authorized bond issue.)

\$ 139,538 48

OUTSTANDINGS.

Deduct	
Out-standing accounts payable as at 31st March, 1915	\$ 2,315 77
Less out-standing accounts payable as at March 31st, 1916	363 86

1,951 91

BALANCE AS AT 31st MARCH, 1916.

Cash on hand	\$ 279 05
Bank—Current Account	1,385 60
Bank—Trust Account	48 23

\$ 1,712 88
2,393 55

Sundry accounts receivable

4,106 43

Total balance at 31st March, 1916	
Less balance at 31st March, 1915	\$ 4,708 42
Deduct Trust Funds in separate account at 31st March, 1915	3,000 00

\$ 1,708 42

2,398 01

\$ 141,936 49

\$ 141,936 49

VANCOUVER, B.C., April 15, 1916.
W. D. HARVIE,
Secretary.

Certified Correct,
WILSON & WILSON,
Auditors.

SESSIONAL PAPER No. 21

APPENDIX No. 14.

PORT WARDENS REPORTS FOR THE YEAR ENDING
DECEMBER 31, 1915.

Returns of fees collected were received from eighteen port wardens during the year, nine from Nova Scotia, two from New Brunswick, two from Quebec, four from British Columbia and one from Ontario.

The total amount of fees collected by port wardens for surveys of hulls, hatches and cargoes, and for granting certificates of seaworthiness was \$24,766.08.

The fees range from \$8 to \$20 according to the time and number of assistants employed in the surveys.

LIST of Port Wardens who made Returns and Amounts of Fees Collected:—

Port.	Port Warden.	Fees collected
Annapolis Royal, N.S.....	J. J. Melanson..	\$ nil.
Chatham, N.B.....	M. A. Goggin...	33 00
Halifax, N.S.....	Neil Hall..	2,697 00
Louisburg, N.S.....	D. J. Matheson.	440 00
Montreal, P.Q.....	Archibald Reid.	15,523 63
Moncton, N.B.....	R. C. Bacon.	nil.
Nanaimo and Departure Bay, B.C	J. S. Knarston.	112 50
Pictou, N.S.....		68 00
Port Hawkesbury, N.S.....	Nicholas Martin.	54 00
Prince Rupert, B.C.....	Captain E. McCoskrie	152 00
Quebec, P.Q.....	Alexander Russel.....	1,349 45
Sydney, N.S.....	N. H. Townsend.....	888 00
North Sydney, N.S	W. H. Kelly.	100 00
Toronto, Ont.....	G. A. Holbrook.....	14 00
Vancouver, B.C	S. Cullington.....	2,639 00
Victoria and Esquimalt, B.C.....	Charles E. Clark.....	528 50
Westport, N.S.	W. B. Welch.	nil.
Yarmouth, N.S.....	R. M. Ferguson.....	167 00
		\$ 24,766 08

REPORT OF THE PORT WARDEN OF MONTREAL.

MONTREAL, January 6, 1916.

Deputy Minister of Marine,
Ottawa.

SIR,—I have the honour by direction of the council of this board and in compliance with section 31 of the Act governing the Port Warden office, 45 Vic., chap. 45, to transmit herewith documents as follows:—

1. Port Warden annual report for the year 1915.
2. Audited statement of receipts and expenditures of the Port Warden office for the year ending December 31, 1915.
3. Statement of investments of Port Warden surplus funds.

I have the honour to be, sir,

Your obedient servant,

GEO. HADRILL,

Secretary.

7 GEORGE V, A. 1917

MONTREAL, December 29, 1915.

To the President and Council
of the Montreal Board of Trade.

GENTLEMEN,—I have the honour to submit the annual report of the business of the Port Warden's office, with the statement of the exports, receipts and expenditure for the year 1915.

The river St. Lawrence was clear of ice, and the buoys being laid for navigation to the sea on the 15th April, ten days earlier than last season.

On the 19th April, water was let into the Lachine canal and the river steamers arrived, ready to resume the season's traffic.

The season of navigation opened by the departure of the schooners *Honorable Hector Langevin* and *Grace Darling* for sea on the 20th April; these vessels had wintered in the port.

The first cargo of wheat arrived from the west on the 22nd April, by the steamer *W. H. Dwyer*.

The first ocean steamer to arrive was the admiralty transport E. 18, ss. *Thespis*; this vessel came in ballast from St. John, N.B., arriving here 30th April, having encountered very little ice in the gulf or river.

The ss. *Jacona* of the Thomson line of steamships was the first vessel to enter the river St. Lawrence by the straits of Belle Isle, on the 4th July, the straits were very little used this season, the reports of the Signal Service were suppressed and no record was kept of the movement of the vessels by the straits.

The continuance of the war has disorganized the shipping to this port, the movements of the steamships of the lines becoming irregular and uncertain, the Imperial Government commandeering the vessels as required.

The only accidents which have occurred this season between Quebec and this port were the grounding of the ss. *Harmatris*, near cap La Roche owing to the jamming of the steering gear, she was floated off at high water, and repaired at Quebec; the stranding of the ss. *Lady of Gaspe* near Quebec bridge, and the grounding of the ss. *St. Cecilia* at the lower part of the harbour. She was floated after lightering and proceeded.

Owing to the scarcity of vessels and the shortage of tonnage for the overseas trade, a number of lake vessels have been engaged in the overseas and coastwise trade.

The water in the river has again been low, the lowest recorded being 28 feet, 8 inches on the 18th November.

The last oversea regular line steamship to sail hence was the ss. *Torr Head*, which left port at 7 a.m. 29th November.

The gas buoys were lifted the same day.

The Canada Steamship Lines, Ltd., ss. *Winona* left port with a full cargo of grain for Sunderland, England, at 10.30 a.m. 3rd December.

On Saturday, 11th December, the lake steamship *Port Dalhousie*, with cargo from lake port for Pictou, N.S., passed through the harbour direct for sea; this was the last vessel outward for the season of navigation, 1915.

This has been a remarkably fine and open fall, there being no ice in the harbour on the 10th December.

Four hundred and eighty-nine foreign going steamships reported at this office this season, with a tonnage of 1,662,686 tons, against 560 vessels of 2,063,517 tons last season a decrease of seventy-one vessels, 400,831 tons.

The business to the lower ports this season consisted of, entered 321 vessels of all classes with a tonnage of 591,529 tons, against 362 vessels of all classes with a tonnage 688,284 tons, a decrease of forty-one vessels and 96,755 tons.

SESSIONAL PAPER No. 21

Clearances of vessels loaded for the lower ports this season were sixty-seven vessels of all classes with a tonnage of 49,055 tons, against 107 vessels of all classes, with a tonnage of 65,759 tons, a decrease of forty vessels and 16,704 tons.

The shipments of various kinds for the past season, manifested and filed at this office up to the 15th December, as per attached statement.

By notice from the Customs Department, manifests of vessels loading at this port were not lodged at this office till thirty days after departure of the vessel.

All of which is respectfully submitted,

ARCHIBALD REID,
Port Warden.

COMPARATIVE STATEMENT of Shipments 1914 and 1915 as per Manifests reported at the Port Warden's Office to 15th December for season 1915.

Description.		1915.	1914.	Increase 1915.	Decrease 1915.
Wheat.	bush.	34,025,099	61,453,112		27,428,013
Peas.	"	29,199	10,628	18,571	
Barley.	"	1,377,441	4,553,544		3,176,103
Oats.	"	7,637,209	8,532,864		895,655
Corn.	"	166,374		166,374	
Flaxseed.	"	1,926	183,186		181,260
Rye	"		366,462		366,462
		43,237,248	75,099,796	184,945	32,047,493
			43,237,248		
Total decrease for 1915.			31,862,548		
Flour and meal.	bbls.	976,752	1,773,215		796,463
Ashes.	"	418	319	99	
Apples	"	94,328	176,720		82,392
Cheese.	boxes.	1,853,006	1,483,151	369,855	
Butter.	"	54,663	7,228	47,435	
Eggs.	"	285,483	113,536	171,947	
Boxmeats.	"	999,696	215,613	784,083	
Lard.	"	413,609	514,114		100,505
Dressed meats.	qrtrs	87,639		87,639	
Pulp.	tons	6,548	4,490	2,058	
Paper	"	17,042	20,553		3,511
Sundries.	"	325,170	122,398	202,772	
Hay	"	107,766	25,571	82,195	
Oilcake.	"	9,907	8,700	1,207	
Minerals.	"	16,964	17,512		548
Lumber ft. board.	meas.	98,121,264	66,423,321	31,697,943	
Cattle.	head.	12,386	1	12,385	
Horses and mules.	"	68,777	12,005	56,772	
Sheep.	"		147		147

STATEMENT of Over Sea or Foreign Going Vessels.

Description.	1915.		1914.	
	No.	Tons.	No.	Tons
Steamers.....	489	1,662,686	560	2,063,517

Decrease of 71 Vessels and 400,831 tons.

STATEMENT of Lower Port Arrivals.

Description.	1915.		1914.	
	No.	Tons.	No.	Tons.
Steamers.....	305	590,094	320	684,369
Sailing Vessels.....	16	1,435	42	3,915
	321	591,529	362	688,284

Decrease of 41 Vessels and 96,755 tons.

CLEARANCES for Lower Ports.

Description.	1915.		1914.	
	No.	Tons.	No.	Tons.
Steamers.....	58	48,229	87	63,803
Sailing vessels.....	9	826	20	1,956
	67	49,055	107	65,759

Decrease of 40 vessels and 16,704 tons.

Revenue 1915.....	\$15,523 63
Revenue 1914.....	9,412 06
Increase. .	\$6,111 57

STATEMENT of the Investments of the Port Warden Office at Montreal, and of Interest accruing therefrom for the Year ending 31st December, 1915.

	Expended \$	2,380 34	in purchase of	Dominion Government Stock...	City of Montreal Bonds, Nos. 1720, 1721, 1722, 1723 and 1724 for \$1,000 each	\$ 2,300 00	at 3½ p.c. per annum for 12 months	\$ 50 50
Feb. 16, 1880								
" 18, 1884		5,031 34	"	"				
March 14, 1887	"	10,320 75	"	"		5,000 00	" 4	200 00
Jan. 6, 1906	"	10,000 00	"	"		10,000 00	" 4	400 00
" 23, 1907	"	4,000 00	"	"		10,000 00	"	400 00
April 27, 1909	"	4,090 00	"	"		4,000 00	" 4	160 00
July 30, 1910	"	7,227 50	"	"		7,000 00	" 5	200 00
Aug. 25, 1913	"	10,036 16	"	"		7,000 00	" 6	420 00
Oct. 19, 1915	"	9,485 62	"	"		10,000 00	" 5½	550 00
Loans to Montreal Board of Trade Building Fund...						10,000 00	" 4½	90 00
						70,000 00	" 4	2,800 00
Total investments...						\$128,300 00	Total interest.	\$,5300 50

A. MCKIM,
Treasurer Montreal Board of Trade.

GEO. HADRILL,
Secretary Montreal Board of Trade.

MONTREAL, January 5, 1916.

SESSIONAL PAPER No. 21

APPENDIX No. 15.

REPORTS OF SUBSIDIZED WRECKING COMPANIES.

SALVAGE SERVICES RENDERED BY THE QUEBEC SALVAGE AND WRECKING COMPANY FROM THE 31st MARCH, 1915, TO 31st. MARCH, 1916.

1915.

- May 3.—SS. *Lord Strathcona* arrived at Quebec after having laid up at our station at St. John, N.B., for the winter months.
- June 7.—Went to assistance in the Louise basin of the Canadian steamer *Haddington*, which steamer struck off Red island, and temporarily repaired her bottom while afloat so that this steamer could proceed on her voyage.
- June 28.—Went to the assistance of the British steamer *Romney*, which steamer ran ashore off Green island; this steamer came off without any extra assistance, but we accompanied her to Quebec.
- August 1-11.—Went to the assistance of the British steamer *Bengore Head*, which steamer was beached on the north side of Hare island after being in collision with the British steamer *Batisca*. Found forward compartments full of water, and an open hole in her side 30 feet by 10 feet. Made temporary side in way of hole and otherwise supplied her with necessary salvage gear, saved her and brought her to Quebec.
- August 23-27.—Went to the assistance of the British steamer *Hendonhall*, which steamer ran ashore off point des Monts, and towed her to Quebec.
- September 15.—Went to the assistance of the ss. *Pretorian* of the Allan Line, which steamer was run into, while lying at anchor off White island owing to fog, by an American steamer. Met the *Pretorian* off Lower traverse, on her way to Quebec.
- October 7-8.—Towed six motor-boats from Quebec to Montreal for the Overseas Transport Company.
- November 1-21.—Went to the assistance of the Canadian steamer *Lady of Gaspe*, which steamer sank alongside pointe-a-Carcy pontoon in such a manner that while the ship sank, she took a list outward and thereby slid the bottom under the pontoon so that the pontoon was resting on the ship's side and considerable damage was caused to the pontoon. Owing to the extraordinary situation, the salvage operation was conducted with the greatest difficulty, but we succeeded in raising the steamer without any further damage to her or to the pontoon.
- November 19-December 4.—The *Lord Strathcona* was chartered by the Department of Naval Service and took the "Q.H.C. floating crane" from Sorel successfully to Halifax.

The *Lord Strathcona* schooner "*G.T.D.*," properly manned, and all other salvage gear have been kept in commission during the season of navigation to proceed to any accidents or mishaps to ships at very short notice.

QUEBEC SALVAGE & WRECKING CO. LTD., OF MONTREAL.

LEVIS, May 17, 1916.

HAAKON KJERLAND,
Superintendent.

7 GEORGE V, A. 1917

REPORT OF SALVAGE OPERATIONS OF THE B. C. SALVAGE COMPANY, LIMITED, FOR THE YEAR ENDING MARCH 31, 1916.

October 8.—November 18, 1915.—To wreck of ss. *Mariposa* at Bella Bella.

December 8-December 24, 1915.—To raising the hopper barge *Sir J. J. No. 28*, sunk at Albert head.

January 12-March 31, 1916.—To salving cargo of ss. *Kenkon Maru No. 3* on Bell Chain reef off Saturna island.

February 1 February 3, 1916.—To ss. *Princess Maquinna* ashore at Menzies bay.

February 27-February 28, 1916.—To G.G.S. *Quadra* sunk in Nanaimo harbour making survey of position and condition.

March 9 March 21, 1916.—To floating ss. *Camosun*, ashore on Digby island, B.C.

VICTORIA, B.C., May 26, 1916.

APPENDIX No. 16.

LIVE STOCK SHIPMENTS.

List of Live Stock shipped from May, 1915 to November, 1915, to ports in Great Britain and France.

MONTREAL.

Months.		Sheep.	Horses.	Cattle.	Mules.	U. S. Cattle.
May, 1915.			434			
June, 1915.			740	1,021		
July, 1915.			1,225	6,874		
August, 1915.			2,370	4,531		
September, 1915.			3,544			
October, 1915.			2,228			
November, 1915.			2,262			
			12,803	12,426		

COMPARATIVE STATEMENT of Live Stock shipped from Canada to British ports from the years 1904-5 to 1915-16. Shipments to France as well in 1914-15 and 1915-16.

	Sheep.			Cattle.			Horses.			Totals.		
	Montreal.	St. John.	Hali-fax.	Montreal.	St. John.	Hali-fax.	Montreal.	St. John.	Hali-fax.	Sheep.	Cattle.	Horses.
1915-16.....	Nil.	Nil.	Nil.	12,426	Nil.	Nil.	12,803	Nil.	Nil.	Nil.	12,426	12,803
1914-15. . .	145	"	"	25	"	"	1,328	"	"	145	25	1,328
1913-14	296	"	"	512	"	"	134	"	"	296	512	132
1912-13.....	178	"	"	6,469	"	"	175	"	"	178	6,469	175
1911-12.	3,725	1,798	"	45,866	2,001	"	138	14	"	5,523	47,967	154
1910-11.....	248	2,508	"	72,555	3,301	"	497	19	"	2,756	75,856	516
1909-10	1,616	Nil.	"	94,314	4,632	"	286	Nil.	"	1,616	98,946	286
1908-09 .	10,111	151	"	99,830	22,923	3,097	116	65	"	10,262	125,850	181
1907-8 . . .	11,585	4,169	"	96,977	20,210	Nil.	174	51	"	15,753	127,187	225
1906-7.....	10,791	1,371	"	128,160	38,148	"	661	57	"	12,162	159,308	718
1905-6.....	19,077	3,971	"	126,871	33,548	1,042	568	79	"	23,048	161,456	647
1904-5	49,422	17,283	"	108,533	33,833	745	279	213	"	66,715	143,131	492

APPENDIX No. 17.

STATEMENT showing the result of returns of shipping and discharging of seamen, received by the Department of Marine and Fisheries, in accordance with the provisions of chapter 113, "An Act respecting Shipping in Canada," from Shipping Masters throughout the Dominion for each half-year ending June 30, 1915, and December 31, 1915.

Note. The Collector of Customs acts as Shipping Master where no other Shipping Master is appointed.

QUEBEC.

Name of Port.	Name of County.	Name of Shipping Master.	HALF YEAR ENDING JUNE 30, 1915.			HALF YEAR ENDING DEC. 31, 1915.			Total.	
			Seamen Shipped.	Seamen Discharged.	Amount.	Seamen Shipped.	Seamen Discharged.	Amount.	Seamen Shipped.	Seamen Discharged.
					\$ cts.			\$ cts.		\$ cts.
Chandler	Gaspé	Collector of Customs								
Escoumains	Saguenay.	C. J. Belanger.	13		6 50	6	23	9 90	19	23
Gaspé	"	Francis G. Eden								
Grand Pabos										
Montreal.	Hochelega	R. S. White.	2,950	996	1,697 80	5,908	2,995	3,852, 50	8,858	3,991
Magdalen Islands	Gaspé	Camille Delaney.								
Paschebiac	"	E. W. Lepanais	6		3 00	6	1	3 30	12	1
Perce	"	Phil La Routellier								
Quebec	Quebec	F. Beland	347	51	183 70	504	500	402 00	851	551
Rimouski	Rimouski									
St. Johns	St. Johns									
Three Rivers..	Three Rivers	W. D. Fisher	96	58	*76 40				96	58
									9,836	4,624
										6,235 10

*11 Bills of Health at \$1 each.

SESSIONAL PAPER No. 21

NEW BRUNSWICK.

Albert.....	Albert.....	H. W. Crocker.			2	5	2 50	2	5	2 50
Alma.....	"	D. C. Cleveland			2	1	1 30	2	1	1 30
Amherst.....	Cumberland	B. W. Balcer..								
Baie Verte.....	"									
Bathurst.....	Gloucester	J. J. Harrington								
Bear River.....	Digby.....									
Chatham.....	Northumberland	R. J. Walls.....	6	4	10	12	8 60	16	16	12 80
Dalhousie.....	Restigouche	Geo. Haddow....	4	3				4	3	2 90
Dorchester.....	Westmoreland	W. D. Wilbur....	6		7	10	6 75	13	10	9 75
Fredericton.....	"									
Grand Harbour	Charlotte									
Harvey.....	Albert.....	H. J. Steven....	3	2	5	4	3 70	8	6	5 80
Hillsborough.....	"									
Lepreau.....	Charlotte									
Musquash.....	St. John.....									
New Brandon.....	Gloucester									
Newcastle.....	Northumberland	John Russell....	2	4		8	2 40	2	12	4 60
Quaco.....	St. John.....									
Riverport.....	Lunenburg									
Riverside.....	Albert.....									
Rockport.....	Westmoreland									
Sackville.....	"	T. W. George....	5	7	3		1 50	8	7	6 10
St. Andrews.....	Charlotte	Thos. R. Wren...		1	1	8	2 90	1	9	3 20
St. John.....	St. John.....	W. H. Purdy....	972	193	619	198	368 90	1,591	391	912 80
Shediac.....	Westmoreland									
Shippigan.....	Gloucester	Jos. L. Gauvin..								
St. Stephen.....	Charlotte	Andrew McWhee..	37	30			27 50	37	30	27 50
St. Martins.....	St. John.....	R. Allan Love...	25	7			14 60	25	7	14 50
St. George.....	Charlotte	George Craig....								
								1,709	497	1,003 75

NOVA SCOTIA.

Advocate Harbour	Cumberland	E. C. Moore.....	1	2		1	1 30	3	3	2 40
Amherst.....	"	B. W. Balser....								
Annapolis Royal.....	Annapolis.	E. McCormick...	6	0	9	7	6 60	15	7	9 60
Antigonish.....	Antigonish.	W. C. Chisholm..								
Apple River.....	Cumberland	H. H. Mosher....	4	4	8	7	6 10	12	11	9 30
Arichat.....	Richmond.	A. F. Boudrot...		12	3	6	3 30	3	18	9 30
Baddeck.....	Victoria...	D. I. Macrae....								
Barrington.....	Shelburne...	W. Rayford Gray.	16	1				16	1	8 30
Barton.....	Digby.....	F. W. Hutchison..	42	8				42	8	23 40
Bayfield.....	Antigonish.	W. M. Stropole...								
Belliveau Cove...	Digby.....	E. C. Theriault...	21	20	15	9	10 20	36	29	26 70

SESSIONAL PAPER No. 21

[illegible]

*9 fishing crews at \$2.50 each.

STATEMENT showing the result of returns of shipping and discharging of seamen, etc.—*Concluded.*

PRINCE EDWARD ISLAND.

Name of Port.	Name of Country.	Name of Shipping Master.	HALF YEAR ENDING JUNE 30, 1915.			HALF YEAR ENDING DEC. 31, 1916.			TOTAL.		
			Seamen Shipped.	Seamen Discharged.	Amount.	Seamen Shipped.	Seamen Discharged.	Amount.	Seamen Shipped.	Seamen Discharged.	Amount.
					\$ cts.			\$ cts.			\$ cts.
Alberton.....	Prince.....	Jas. F. White.....	91	6	47 30	33	68	36 90	124	74	84 20
Charlottetown.....	Queens.....	F. Beers.....									1 10
Crapaud.....	".....	Neil Waddle.....				1	4	1 10	1	4	2 00
Georgetown.....	Kings.....	T. E. Morrisey.....	4		2 00				4		
Malpeque.....	Prince.....	R. J. Crafer.....									
Murray Harbour.....	Queens.....	H. A. Bell.....									
Montague.....	Kings.....	E. Parkman.....	16		8 00				10		8 00
Pinette.....	Queens.....										
Port Hill.....	Prince.....	W. J. Montgomery.....									
St. Peters.....	Kings.....										
Souris.....	".....	Archd. C. Currie.....									
Summerside.....	Prince.....										
Tignish.....	".....										
									139	78	95 30

BRITISH COLUMBIA.

Aboucet.....	Vancouver.....	John Grice.....									
Clayoquot.....	Comox-Atlin.....										
Hesquait.....	".....										
Kyuquot.....	".....	Amos Ellis.....				3	1	1 80	3	1	1 80
Masset.....		C. Harrison.....	25	25	20 00				25	25	20 00
Prince Rupert.....	Prince Rupert.....	E. McCoskrie.....	201	200	160 00	428	278	297 40	629	478	457 40
New Westminster.....	New Westminster...	M. M. Matheson.....		3		0 90				3	0 90
Victoria.....	Victoria.....	Geo. Kirkendale.....	632	488	462 40				632	488	462 40
Vancouver.....	New Westminster...	J. B. Campbell.....	679	642	660 50	827	566	634 30	1,506	1,208	294 80
									2,795	2,263	2,237 30